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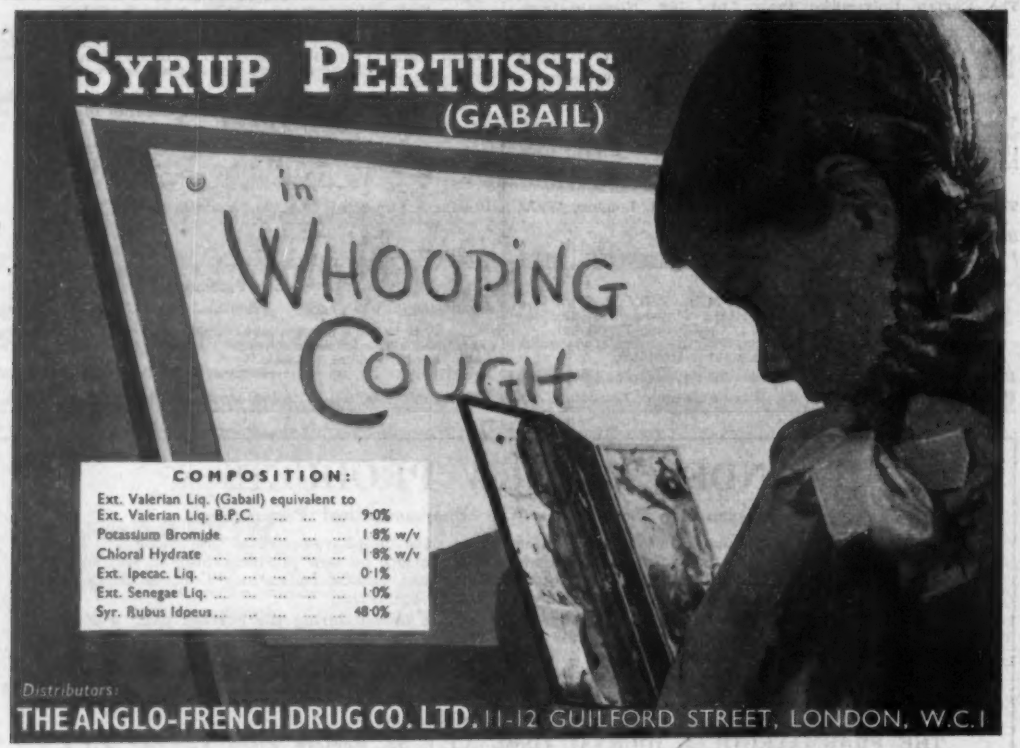
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In a clinical trial (*Medical Press*, 1951, 226, 483) on 103 cases of varicose ulceration, 100 either healed or improved by treatment with Viacutan Solution and tight supportive bandaging. More recently (*Brit. Med. J.*, 1957, i, 43) 61 cases of gravitational and ischaemic ulcers were treated with a new Viacutan Emulsion (1% Silver Dinaphthylmethane Disulphonate) applied under tight supportive bandaging with the following advantages :—
There was no pain on application and on pressure bandaging ; Dressings were applied only once daily and were removed without discomfort ; The healing time was shortened. Once the ulcers have been dried up as a result of applying Viacutan Emulsion, dressings of Viacutan Cream, covered by the tight bandaging, may be used as an alternative.

Viacutan "WB"

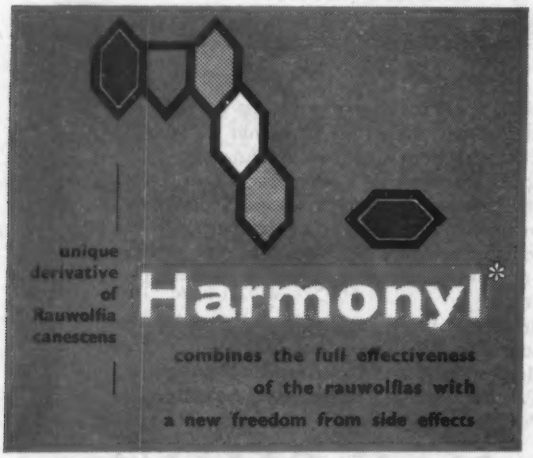
Highly penetrating bactericide which stimulates healing

Supplies : Emulsion—100 and 400 c.c. bottles ; Cream—25 gm. tubes

Detailed literature and samples are available on request

WARD, BLENKINSOP & COMPANY, LIMITED

YORK HOUSE, 37, QUEEN SQUARE, LONDON, W.C.1
Telephone : HOLborn 5992. Telegrams : Duochem Westcent, London



* TRADEMARK FOR DESERPIDINE, ABBOTT

Harmonyl makes rauwolfia more useful in your everyday practice. Two years of clinical evaluation have shown that this new alkaloid exhibits significantly fewer and milder side effects than reserpine. Yet, Harmonyl compares to the most potent forms of rauwolfia in effectiveness.

Most significant: Harmonyl causes less mental and physical depression—and far less of the lethargy seen with many rauwolfia preparations.

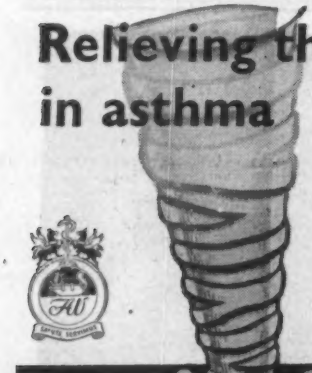
Patients become more lucid and alert, for example, in a study of chronically ill, agitated senile cases treated with Harmonyl. And these patients were completely free from side effects — although a similar group on reserpine developed such symptoms as anorexia, headache, bizarre dreams, shakes and nausea.

Harmonyl has also demonstrated its potency and relative freedom from side effects in hypertension. In a study comparing various forms of rauwolfia, the investigators reported deserpidine "an effective agent in reducing the blood pressure of the hypertensive patient both in the mild to moderate, as well as the severe form of hypertension." They also noted that side reactions were "less annoying and somewhat less frequent" with this new alkaloid. Other studies confirm that few cases of giddiness, vertigo or sense of detached existence are seen with Harmonyl.

Harmonyl is supplied in 0.25 mg. grooved tablets.

Abbott LABORATORIES LIMITED · LONDON

Relieving the bronchial tree in asthma



'ASMAC' TABLETS are formularized to provide symptomatic relief of the bronchial tree both during actual dyspnoeic attacks of bronchial asthma, and during remissions.

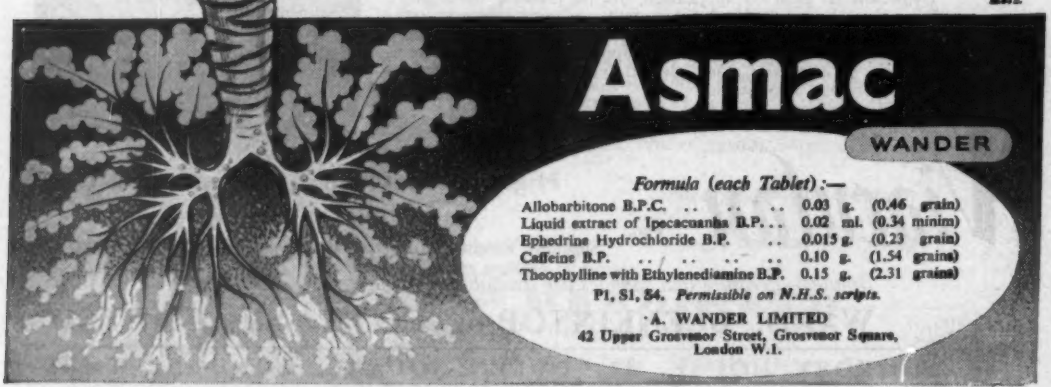
'Asmac' Tablets combine in a single prescription 'official' drugs recognized for their reliability to effect mental sedation, decongestion, expectoration and bronchodilatation.

Packs and Cost to Pharmacists:

Standard Tube of 20, 3/-

Dispensing Bottles:
100, 12/-; 500, 52/6;
1000, 102/6

M372.



Asmac

WANDER

Formula (each Tablet):—

Allobarbitone B.P.C.	0.03 g.	(0.46 grain)
Liquid extract of Ipecacuanha B.P.	0.02 ml.	(0.34 minim)
Ephedrine Hydrochloride B.P.	0.015 g.	(0.23 grain)
Caffeine B.P.	0.10 g.	(1.54 grains)
Theophylline with Ethylenediamine B.P.	0.15 g.	(2.31 grains)

P1, S1, S4. *Permissible on N.H.S. scripts.*

A. WANDER LIMITED
42 Upper Grosvenor Street, Grosvenor Square,
London W.1.

EAR WAX *Removed this easy way*

The removal of wax from the external auditory meatus has, in the past, normally entailed attendance by the patient for diagnosis and for the prescription of a suitable loosening agent, and a second attendance a few days later for syringing.

Now, by the use of Cerumol Ear Drops, wax can be removed in most cases at one visit. A few drops of Cerumol can be instilled into the ear and, while another patient is being attended to, the soft cerumen dissolves and the harder wax disintegrates. The wax can then be removed by gentle syringing or with cotton wool. The wax may even be found to run out of the ear on its own accord, in which case patients themselves may instil Cerumol at home, obviating further attendances.

Cerumol is anti-bacterial, non-irritating and harmless to the lining of the external auditory meatus or the tympanic membrane.

Cerumol is included in Category No. 4 of the M.O.H. classified list of Proprietary Preparations and may be prescribed on N.H.S. Form E.C.10.

PACKS:—For Surgery Use: 10 *c.c. vial—separate dropper included. (Basic N.H.S. price* 2/8.) *For Hospital Use:* 2 *oz. and* 10 *oz. bottles.*

CERUMOL

EAR DROPS

for the easier removal of wax

If you wish to test for yourself and have not received recently a 10 *c.c. vial, please write or telephone direct to:*

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Analgesic administration to children

Whether for analgesic or antipyretic purposes 'Angiers' is the ideal aspirin for administration to young patients. Parents, too, gain peace of mind.

'Angiers' is pure aspirin, in tiny pink 1¼ grain tablets, orange-flavoured and pleasant to suck, chew or swallow. They disintegrate as rapidly in the stomach as they do in milk, water or the salivary juices of the mouth. Each 'Angiers' Tablet also contains 1.50 grains of Dicalcium Phosphate, to check any possible salicylic irritation of sensitive stomachs.

Dispensing Pack (500 tablets) Also from all chemists in bottles of 50 tablets at 1/7d. including P.T.

The Junior Aspirin is

Angiers

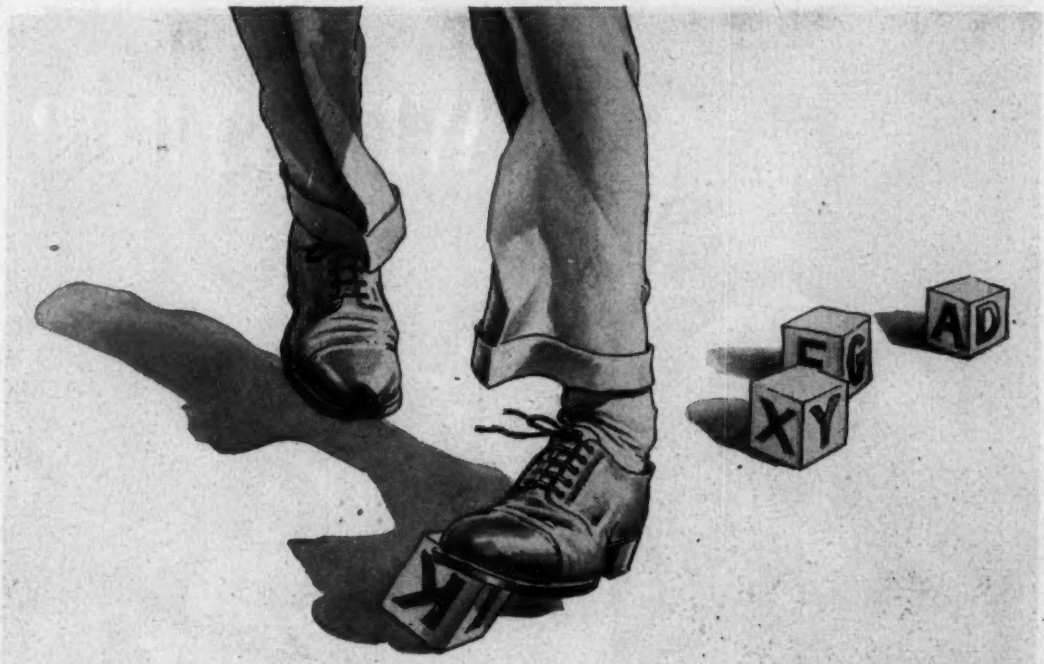
Specially made for children

THE ANGIER CHEMICAL COMPANY · LONDON · S.E.1

Proprietors: Bristol-Myers Company Ltd.

CVS-26

Rarical
TRADE MARK
iron-calcium tablets
a new compound containing
ferrous calcium citrate with tricalcium citrate
Iron plus calcium
in one molecule
● a white uncoated tasteless tablet
● no gastrointestinal disturbances
● outstanding therapeutic response
LITERATURE ON REQUEST
Ortho
Ortho Pharmaceutical Limited · High Wycombe · England
pregnancy
adolescence
menorrhagia
anaemia
infancy
lactation
Iron plus calcium
in one molecule
Each tablet contains iron, 25 mg., calcium, 85 mg.



A sprained ankle—if nothing worse

The hazards of our modern urban civilization provide a rich harvest of strains and sprains. Elastoplast Bandages are used as routine in the remedial procedures following such injuries.

Porosity of Elastoplast Bandages permits free evaporation of sweat. Firm elastic support with desired amount of stretch and regain is assured.

Adhesive is not spread to the fluffy edges of the bandage—minimising rucking of bandages and soiling of overlying stockings. Elastoplast Bandages are made to the well-known Smith & Nephew high standard of quality.

Elastoplast elastic adhesive porous bandages are available in 3-yard lengths and 2″, 2½″, 3″ and 4″ widths. Prescribable on Form E.C.10.

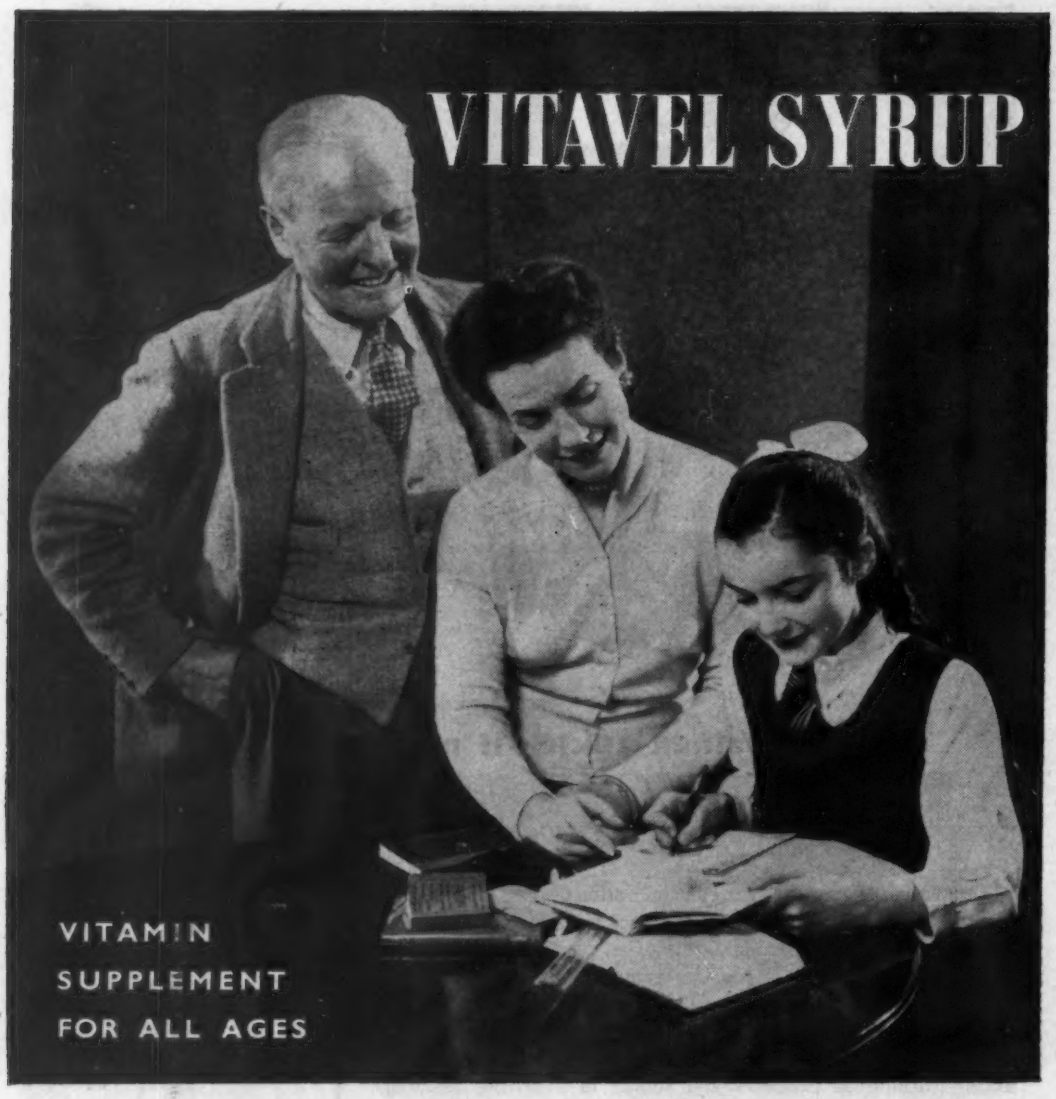
Elastoplast

TRADE MARK.

Elastic adhesive bandages (Porous) B.P.C.

For a sprained ankle the Elastoplast should be applied from without, inwards, from the base of the toes to the knee. It should be applied as soon after the accident as possible, thus immediately providing firm support and controlling the formation of effusion and hæmatoma. Small pads of wool or plasticine in the malleolar sulci prevent hæmatoma formation.

an S&N product SMITH & NEPHEW LTD · WELWYN GARDEN CITY · HERTS



Here is a liquid vitamin supplement that is truly delicious —Vitavel Syrup. This careful blend of real orange juice and liquid glucose with vitamins A,B_1,C, and D is readily accepted by patients of all ages and dispositions.

One fluid ounce contains at time of manufacture:—

VITAMIN A 20,000 i.u. VITAMIN D 3,000 i.u. VITAMIN B_1 4 mg.
VITAMIN C 80 mg. LIQUID GLUCOSE B.P. 25% w/v.

Basic price to N.H.S. 6 *fl. ozs.* 2/6, 40 *fl. ozs.* 16/-

BEMAX *stabilized wheat germ*

This richest natural vitamin-protein-mineral supplement is now available in two flavours, plain Bemax and chocolate-flavoured Bemax (of special appeal to children).

PREGNAVITE *during pregnancy*

A comprehensive vitamin-mineral supplement specifically designed to supply the enhanced dietary needs of pregnancy.
Basic price to N.H.S. 1,000 tablets 32/9.

VITAMINS LIMITED (DEPT. B.3) UPPER MALL LONDON W.6.

Night attack

The angina patient goes to bed in fear and may wake in agony. Peritrate prophylaxis can ease his mind considerably. Since Peritrate is a *long-lasting* coronary vasodilator, a single dose affords protection for as long as 4 to 5 hours . . . a considerable part of the night. Peritrate will not abort attacks completely — but it prevents attacks or reduces their severity in up to 80% of cases. Exercise tolerance is increased, nitroglycerin intake is reduced and very few side-effects occur.

Active principles: Pentaerythritol tetranitrate 10 mg.

Packing: Bottles of 50 tablets and packs of 500 supplied to chemists for dispensing only.

PERITRATE WITH PHENOBARBITONE. (Peritrate 10 mg. with Phenobarbitone 15 mg.) is also available, similarly packed.

Peritrate

Trade Mark

WILLIAM R. WARNER & CO. LTD., LONDON and EASTLEIGH

PWW 977/4

. . . and it is this dual effect, this power to control local infection and stimulate the growth of new tissue which, more than anything else, characterises Cicatrin. Moreover, Cicatrin, containing as it does bacitracin and neomycin (the combined effect of which is bactericidal and bacteriostatic), renders unnecessary the use of antibiotics more valuable in systemic use. At the same time Cicatrin is effective against most pathogens including those resistant to penicillin and other antibiotics. One of the very great advantages of Cicatrin is its convenience in emergencies and in the smaller . . .
CICATRIN
amino acid antibiotic therapy
Each gramme contains:
Neomycin Sulphate 5 mg.
Zinc Bacitracin 250 units
l-Cystine 2 mg.
dl-threonine 1 mg.
Glycine 10 mg.
POWDER: 15 gramme Sprinkler
CREAM: 15 gramme Tube
CALMIC LIMITED
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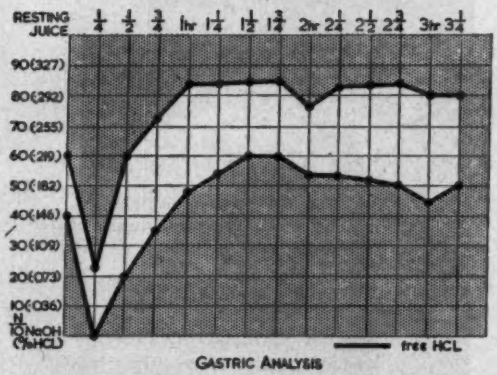
"an approach to the ideal is provided by a slowly dissolving antacid tablet which is lodged between the gum and cheek. Thus, with each act of swallowing, alkali is carried down over the gullet to the stomach. It is remarkable how little is the quantity needed to depress effectively the concentration (pH) of gastric HCl. The first such tablet ('nulacin')...."

Practitioner, January, 1957.

NULACIN THERAPY

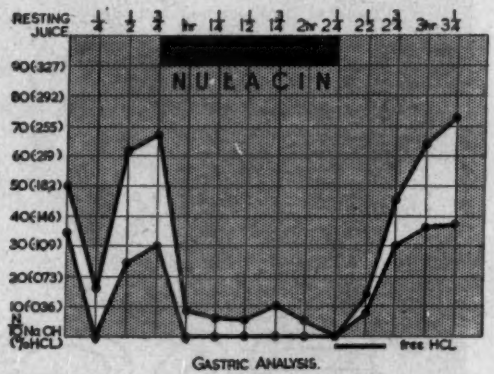
—Simple, safe, effective



GASTRIC ANALYSIS

A Nulacin tablet effectively depresses the concentration of gastric HCl in peptic ulcer and other conditions of hyperacidity. It also provides protection against gastric HCl to the otherwise unprotected oesophageal wall and in such conditions as oesophagitis and hiatus hernia.

SUPPLY. Nulacin tablets may be prescribed on E.C.10. The dispensing pack of 25 tablets is free of Purchase Tax. (Basic price to N.H.S.: 2/-). Also available in tubes of 12.



GASTRIC ANALYSIS.

HORLICKS LIMITED *Pharmaceutical Division, Slough, Bucks., England*

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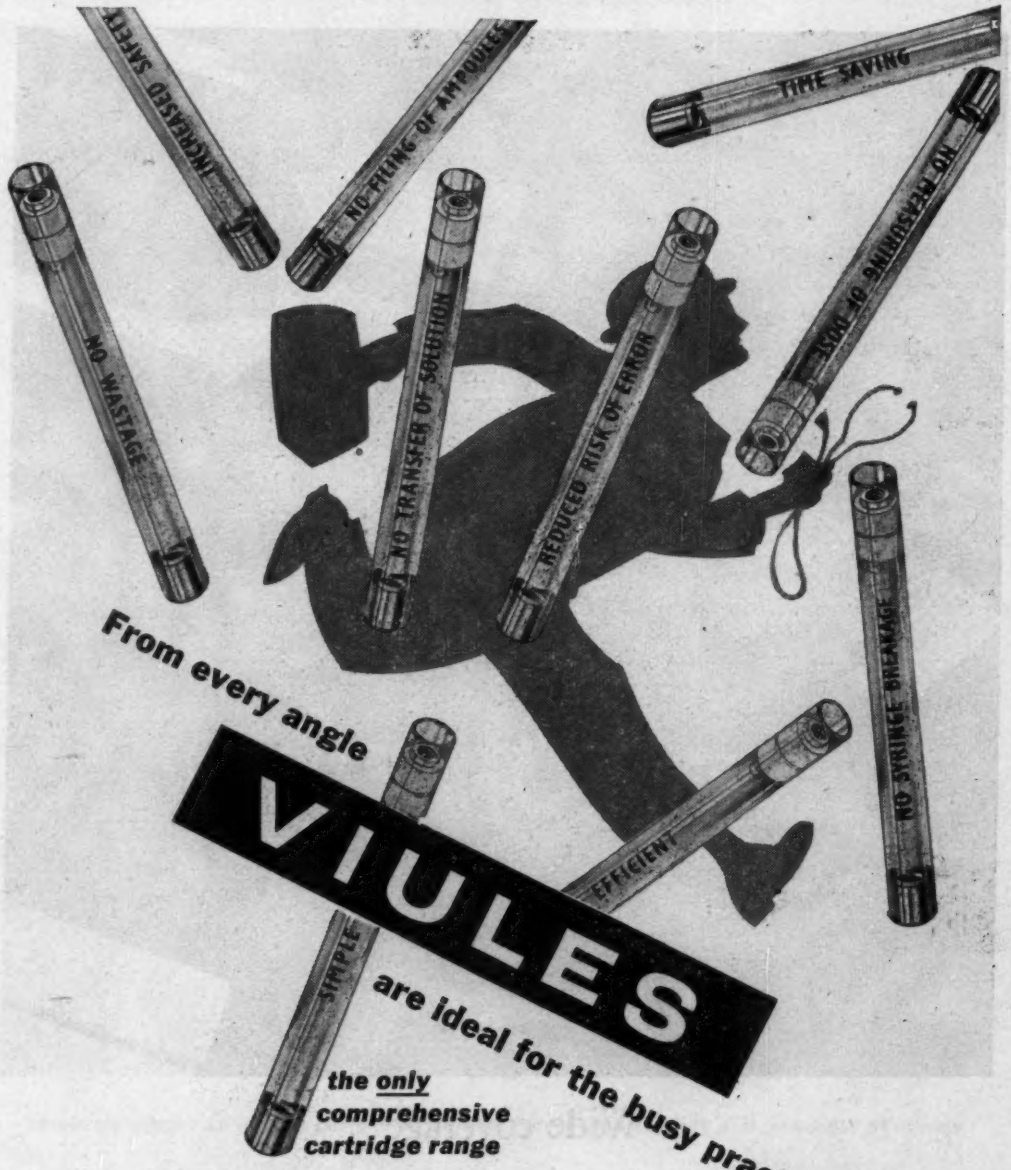
The Control of Gastric Acidity, *Brit. Med. J.*, 26th July, 1952, 2: 180-182

Intractable pain
Pacatal alters reaction to pain in such a way that awareness of it is much reduced.
Pacatal potentiates narcotics and analgesics.
Smaller quantities of narcotics and analgesics are required when Pacatal is prescribed and the patient supports his condition with much less distress.
Dosage:
1 tablet (25 mg.) two or three times a day
PACATAL
TRADE MARK
10-(N-methyl-3-piperidylmethyl) phenothiazine
Tablets of 25 and 100 mg. strength in bottles of 50 and 500
Ampoules each containing 50 mg. in 2 ml. in boxes of 10 and 50
WILLIAM R. WARNER & CO. LTD., POWER ROAD, LONDON, W.4.



SAFE • SURE • SIMPLE & SPEEDY

the Viule injection technique in use throughout the world, offers outstanding advantages at no extra cost. Details of the syringe and a list of the wide range of drugs available will be gladly sent on request.

BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM ENGLAND

Boots

s 303

Wide coverage

WHEN you prescribe 'Sulmezil' V you are prescribing *two* drugs. The two active ingredients, used together, cover a far wider range of bacteria than either used alone.

One ingredient is penicillin V, the acid stable form of penicillin which is rapidly and efficiently absorbed and gives consistent and reliable blood levels. This form of penicillin has proved to be markedly superior in these respects to other oral penicillin preparations.

Combined with penicillin V is 'Sulphamezathine', which has been widely accepted for many years on account of its high potency coupled with low toxicity. It is undoubtedly the best sulphonamide for routine use.

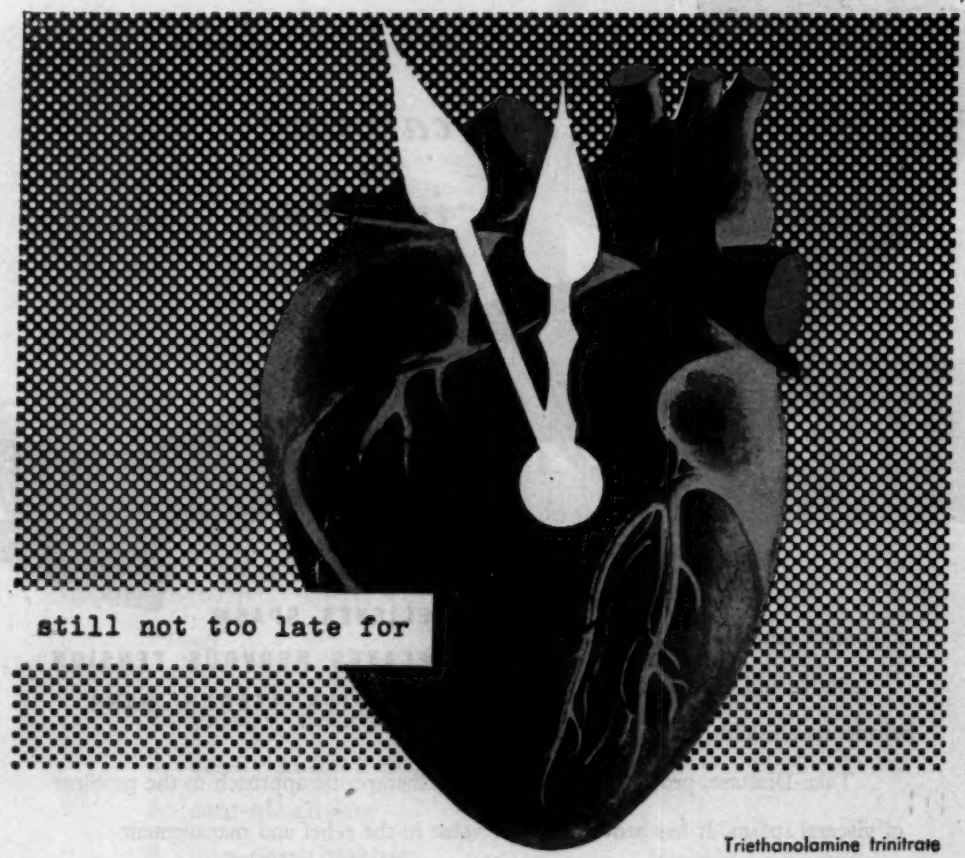
'Sulmezil' V tablets present these two drugs in a single easily-administered form. Each tablet contains 60 mg. of penicillin V (Calcium Salt) and 0.5 g. of 'Sulphamezathine'. In packs of 25, 100 and 500.

'Sulmezil' V tablets

IMPERIAL CHEMICAL INDUSTRIES LIMITED Pharmaceuticals Division Wilmslow Cheshire
Ph.753

ICI

Angina pectoris



Triethanolamine trinitrate

PRAENITRONA

Prevents attacks of angina pectoris or at least reduces the severity and frequency of attacks

For maintenance treatment, 1–2 tablets 3 or 4 times a day
Packings: 50 · 500 · 1000 tablets, each of 1 mg.

Praenitrona is prescribable on N. H. S. Form E. C. 10

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Samples and literature are available upon request from the sole distributors for the U.K.:
Pharmethicals (London) Ltd., 20, Gerrard Street, London, W. 1

a three-fold calming influence . . .

RELIEVES SPASM
RELAXES NERVOUS TENSION
LIQUEFIES STARCH MASS

BARDASE,* combining the antispasmodic, sedative and amylolytic properties of belladonna alkaloids, phenobarbitone and Taka-Diastase, presents a comprehensive therapeutic approach to the problem of visceral spasm. It has proved of great value in the relief and management of gastro-intestinal disturbances, particularly peptic ulcer and the irritable colon syndrome. BARDASE may also be prescribed as a useful adjunct to other treatment in cases of ulcerative colitis.

* *Trade Mark*

Bardase

SPASMOLYTIC SEDATIVE DIGESTIVE AID

Yellow sugar-coated tablets supplied in bottles of 50 and 500

BARDASE LIQUID IS AVAILABLE IN BOTTLES CONTAINING 4 AND 16 FLUID OUNCES

PARKE, DAVIS & COMPANY LIMITED *(Inc. U.S.A.)* **HOUNSLOW, MIDDLESEX** *Tel:* **HOUNSLOW 2361**

670

PREDICTABLE *ANTACID THERAPY*

PRODEXIN

1 **rapidly relieves gastric pain**
2 **safely buffers excess acid**
3 **non-alkalising**
4 **non-constipating**
5 **stable, consistent and predictable**

Prodexin tablets sucked at regular intervals provide continuous buffering of gastric acid at about *p*H 4, no matter how acid the stomach contents or how often the stomach empties. Prodexin does not alkalise the stomach and does not stimulate compensatory secretion of acid. The tablets are pleasant to take, non-gritty and non-constipating.

PRODEXIN

Each Prodexin tablet contains:

Aluminium glycinate
(dihydroxy aluminium aminoacetate).....0·9 gramme
Light magnesium carbonate.....0·1 gramme

Cartons of 30 singly wrapped tablets.

Dispensing packs of 240 tablets (basic N.H.S. cost 30/4d.)

601/60/2

C. L. BENCARD LTD. · PARK ROYAL · LONDON · N.W.10

as the patient sees it . . .

The ophthalmic forms of ACHROMYCIN tetracycline are acceptable in *every* sense —not only from the physician's angle but from the patient's viewpoint too. Simple and painless to use, they are virtually free from unwanted side effects. The patient will therefore co-operate to the full in following the course of treatment prescribed.

In many cases of conjunctivitis and of ocular infection due to staphylococci, streptococci and other sensitive organisms, *local* measures with the Ophthalmic Ointment or Sterilized Powder are fully effective. In more severe conditions, however, simultaneous systemic treatment should be adopted with one of the oral forms of the drug.

Achromycin*

TETRACYCLINE

*Regd. Trade Mark

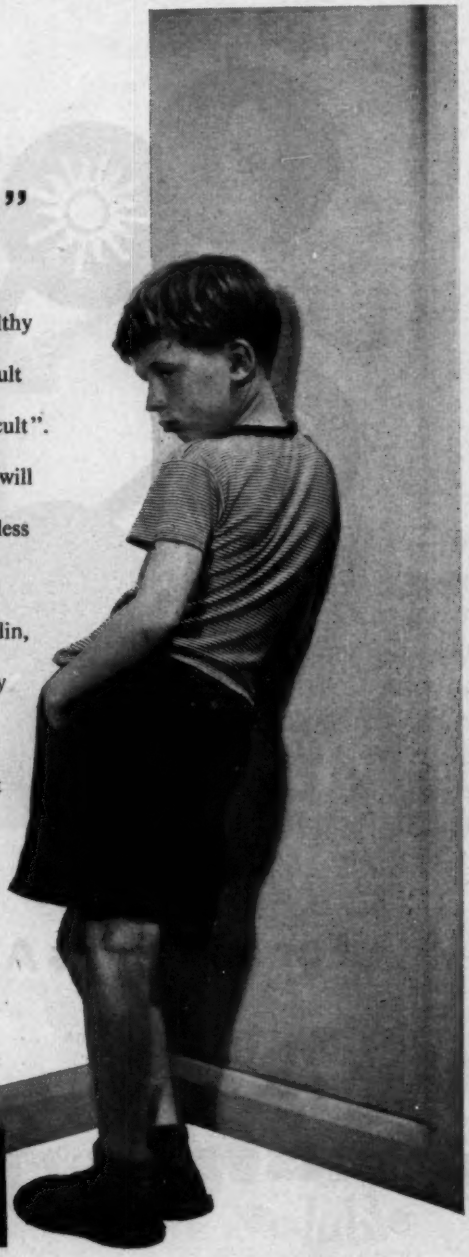
Ointment (Ophthalmic) 1%:
10 mg. per Gm. : ¼-oz. tubes in boxes of six

Ophthalmic Powder Sterilized:
25 mg. per vial : supplied with dropper vial

CYANAMID 1907 50 1957

LEDERLE LABORATORIES DIVISION
Cyanamid OF GREAT BRITAIN LTD., London W.C.2

"He's such a problem, Doctor . . . . !"



In every other respect a normal healthy child, he has never been dry at night, with the result that he has acquired undeservedly the label "difficult". As he grows older his shame and embarrassment will become more acute as those around him become less tolerant of his disability.

In his case, as in the case of many others, Di-sipidin, by controlling enuresis symptomatically on strictly physiological lines, offers a real prospect of an early return to normal function with a consequent restoration of confidence and self-respect.

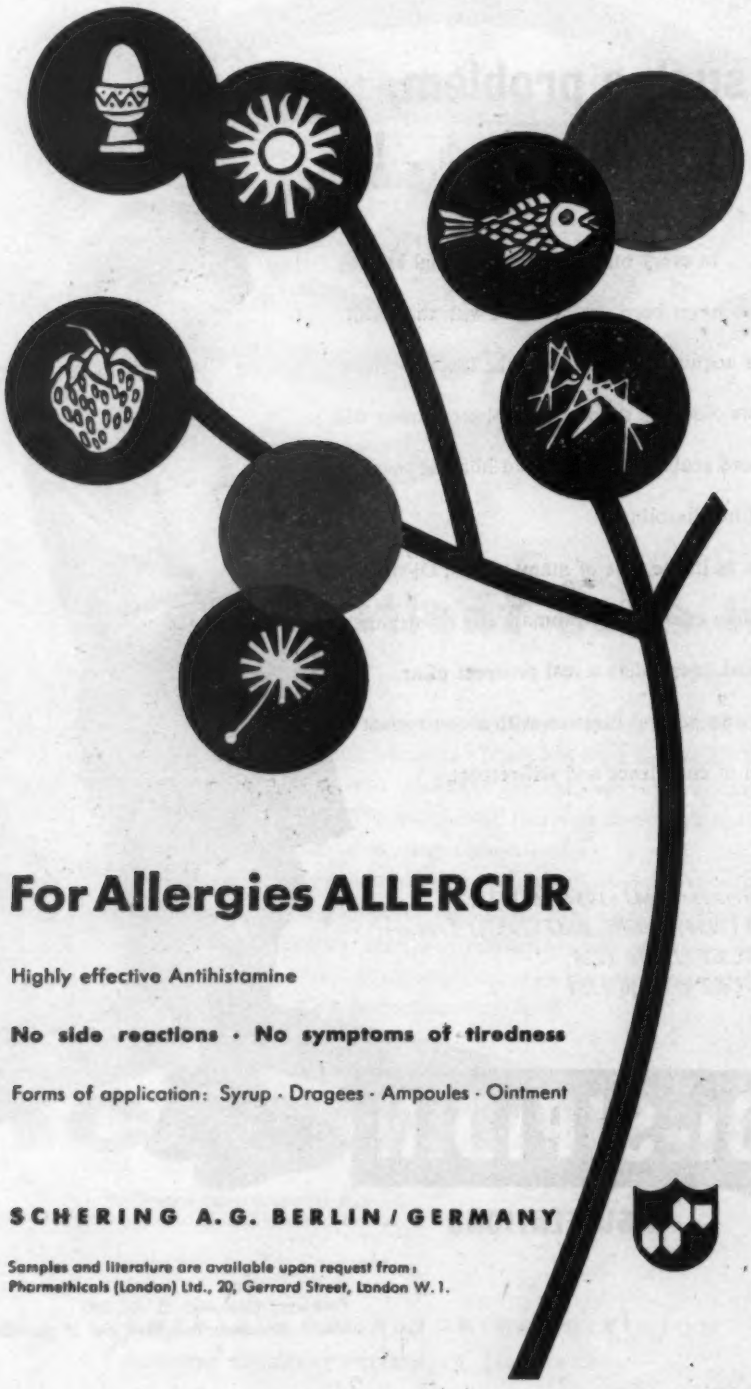
References: BMJ (1954)11, 1433; BMJ (1954)1 1038; BMJ (1955)1 1194; LANCET (1955)i 1228; LANCET (1956)ii 1334

DI-SIPIDIN

INSUFFLATIONS

Packings: Capsules: 25, 100, 500
Outfit: Di-sipidin Insufflator and 25 capsules.

PAINES & BYRNE LTD., PABYRN LABORATORIES, GREENFORD, MIDDX.



For Allergies ALLERCUR

Highly effective Antihistamine

No side reactions · No symptoms of tiredness

Forms of application: Syrup · Dragees · Ampoules · Ointment

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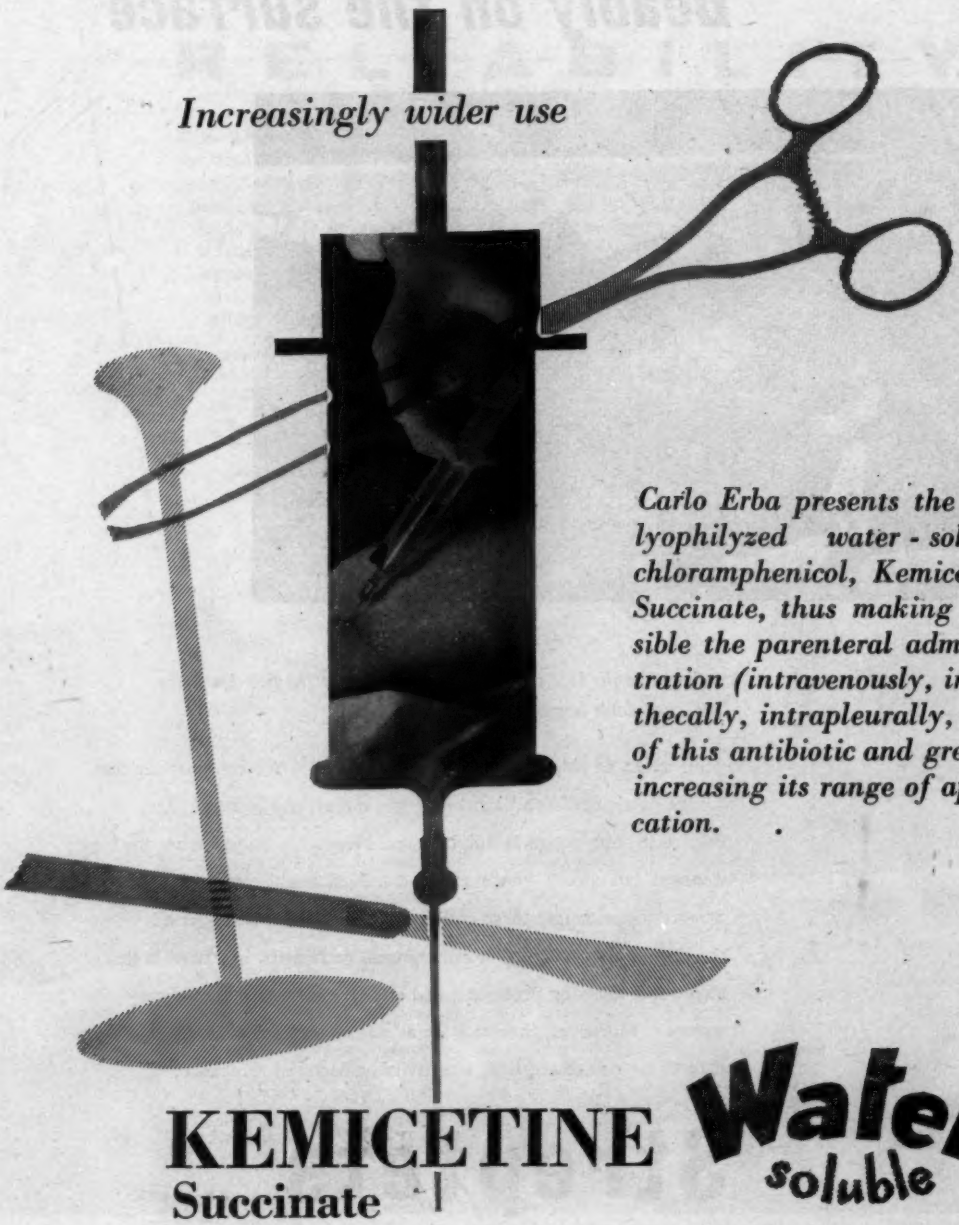
Increasingly wider use



Carlo Erba presents the first lyophilyzed water - soluble chloramphenicol, Kemicetine Succinate, thus making possible the parenteral administration (intravenously, intrathecally, intrapleurally, etc.) of this antibiotic and greatly increasing its range of application.

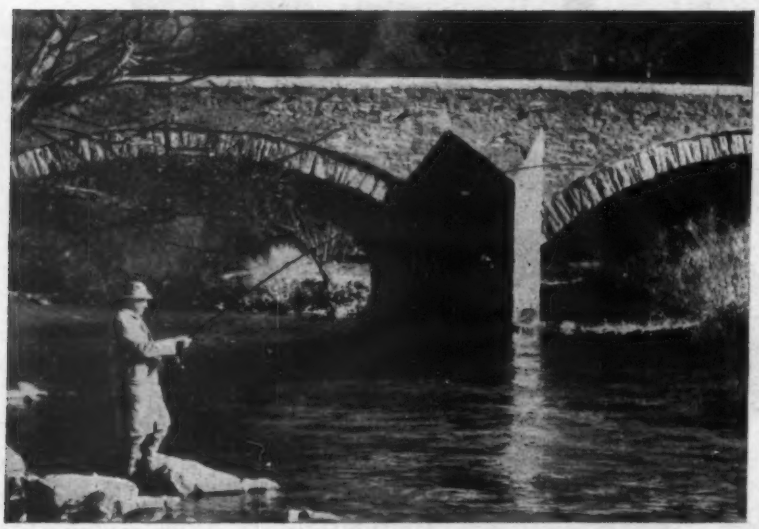
KEMICETINE
Succinate

Water soluble

CARLO ERBA MILANO

CARLO ERBA MILANO

Deadly on the surface



" They are the best three flies I know, and if the fish don't like 'em, they don't know what's good for 'em."

Thus spake an elderly and experienced angler. We can only say that for the particular ' fish ' inhabiting the mouth and pharynx, Zinc Bacitracin, Polymyxin B Sulphate and Neomycin Sulphate are the best three we can choose from the box of topical antibiotics.

Streptets incorporate these antibiotics, which together cover all the commonly occurring oro-pharyngeal pathogens, in a hard-boiled, sweet base allowing prolonged and effective baiting of the salivary stream. Moreover, Streptets are as safe as they are palatable and carry little or no risk of acquired sensitivity or bacterial resistance.

Streptets TRADE MARK

PACKS:

Bottles of 20. Each troche contains 50 I.U. Zinc Bacitracin, 500 units (60 mcg. approx.) Polymyxin B Sulphate and 1 mg. Neomycin Sulphate.

Wyeth John Wyeth & Brother Limited, Clifton House, Euston Road, London, N.W.1

S.2

R-E-L-I-A-B-I-L-I-T-Y

It is difficult to obtain therapeutically effective blood levels of theophylline by oral administration of aminophylline. They can, however, be achieved easily and reliably using 'Theodrox' tablets, which combine aminophylline with specially prepared aluminium hydroxide gel. The latter delays hydrolysis of aminophylline, and thereby avoids gastric irritation, an advantage which has been demonstrated by widespread clinical usage. As the aminophylline molecule is unchanged, there is no delay in onset of action, and 'Theodrox' is more effective than simple aminophylline therapy.

'Theodrox' is indicated in bronchial or cardiac asthma. It is also indicated as a diuretic in congestive heart failure, and as supplementary therapy in status asthmaticus and angina pectoris.

Each 'Theodrox' tablet contains gr. 3 aminophylline and gr. 4 dried aluminium hydroxide gel.

'Theodrox' with Phenobarbitone tablets contain in addition gr. ¼ phenobarbitone.

The winning Jaguar, Monte Carlo Rally, 1956.

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PREDNISONE

METICORTEN*

and

PREDNISOLONE

METICORTELONE*

discovered and introduced

November 4, 1954— Announcement of first clinical trials anywhere with Prednisone and Prednisolone[1]

January 21, 1955—— First editorial commentary on Prednisone and Prednisolone to appear in any journal[2]

January 22, 1955—— First published clinical report on Prednisone and Prednisolone in any professional journal[3]

February 4, 1955—— First published pharmacologic data on Prednisone and Prednisolone in any scientific journal[4]

February 23, 1955— Schering Corporation first in the world to introduce Prednisone for general medical use

May 27, 1955——— Schering Corporation first in the world to introduce Prednisolone for general medical use

May 31 and June 1, 1955—— First International Conference on the Clinical and Metabolic Effects of METICORTEN (Prednisone) and METICORTELONE (Prednisolone) held in New York[5]

September 8, 1955— First patent on Prednisone and Prednisolone issued in any country[6]

developed
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1. First Scientific Interim Session of the American Rheumatism Association, Bethesda, Maryland, U.S.A.: BULLETIN ON RHEUMATIC DISEASES, 5:81, 1955.
2. PHILADELPHIA MEDICINE, 50:671, 673, 1955.
3. JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 157:311-318, 1955.
4. SCIENCE, 121:176, 1955.
5. Sponsored by Clinical Research Division, Schering Corporation, U.S.A.
6. Dom. Republic Patent No. 617, Sept. 8, 1955, first patent on Prednisone and/or Prednisolone issued in any country, and first of many Schering Corporation patents on the new steroids since issued throughout the world.

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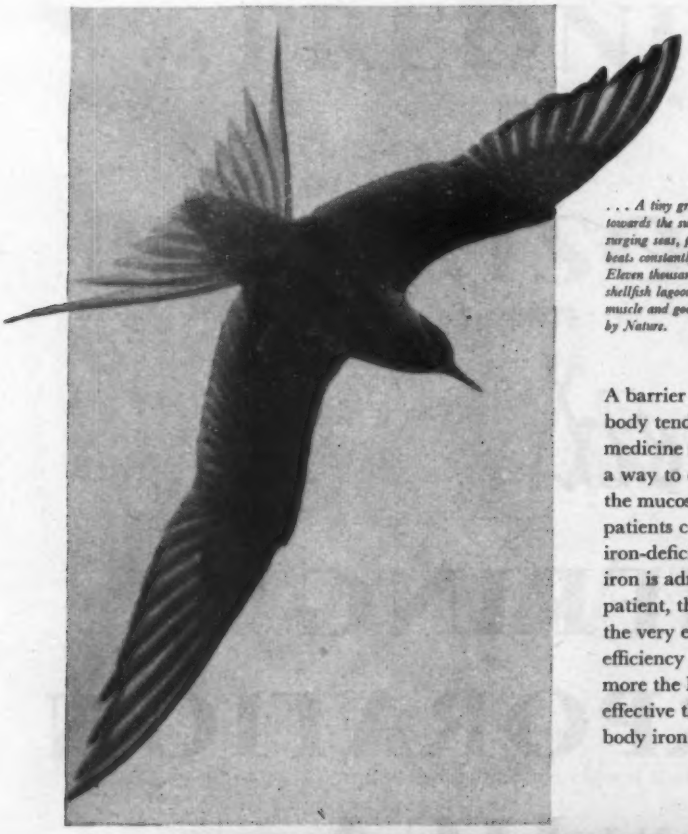

. . . A tiny grey body, a red bill, a black cap, skimming towards the sun on wide pearly wings. Storming the great surging seas, plucked aside by blustering ocean squalls, it beats constantly on. There is no respite for the Arctic tern. Eleven thousand miles must be flown before it reaches the cool shellfish lagoons of its Antarctic summer home. Through muscle and good technique it overcomes the barrier set up by Nature.

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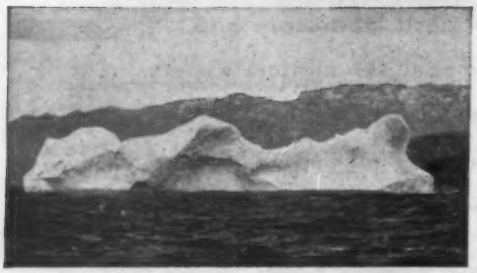

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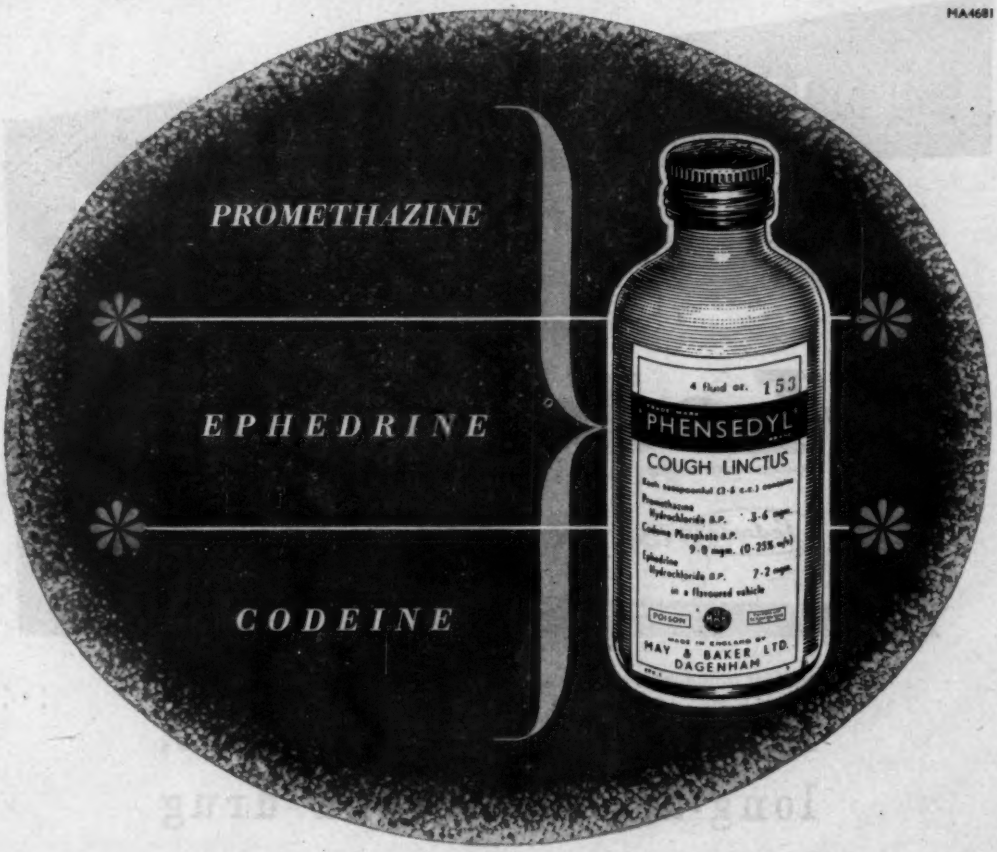

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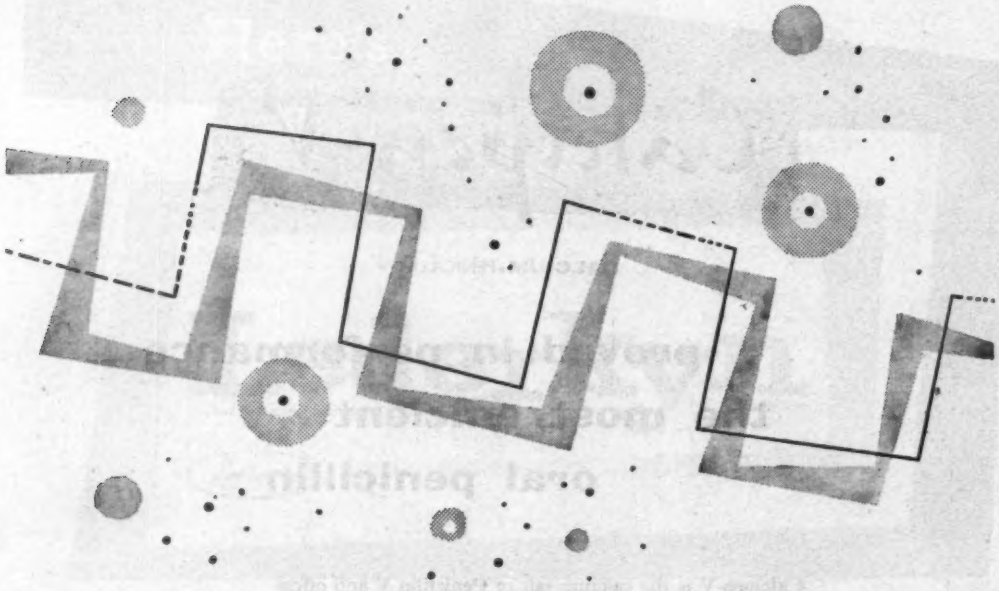

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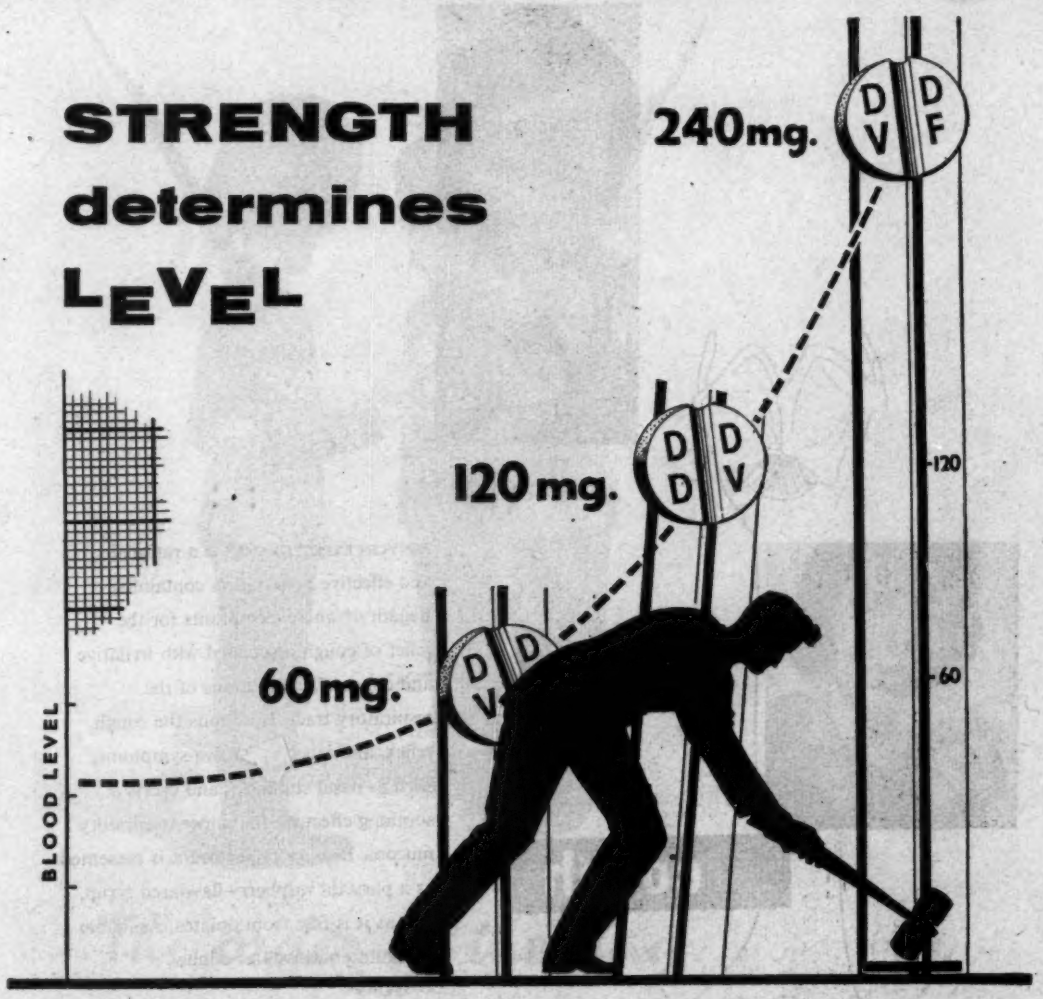

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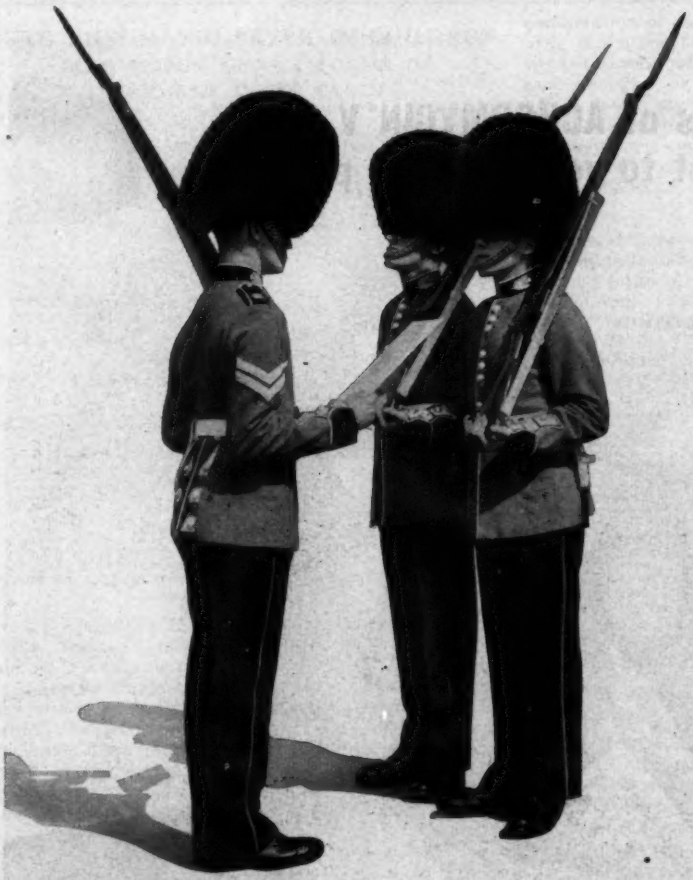

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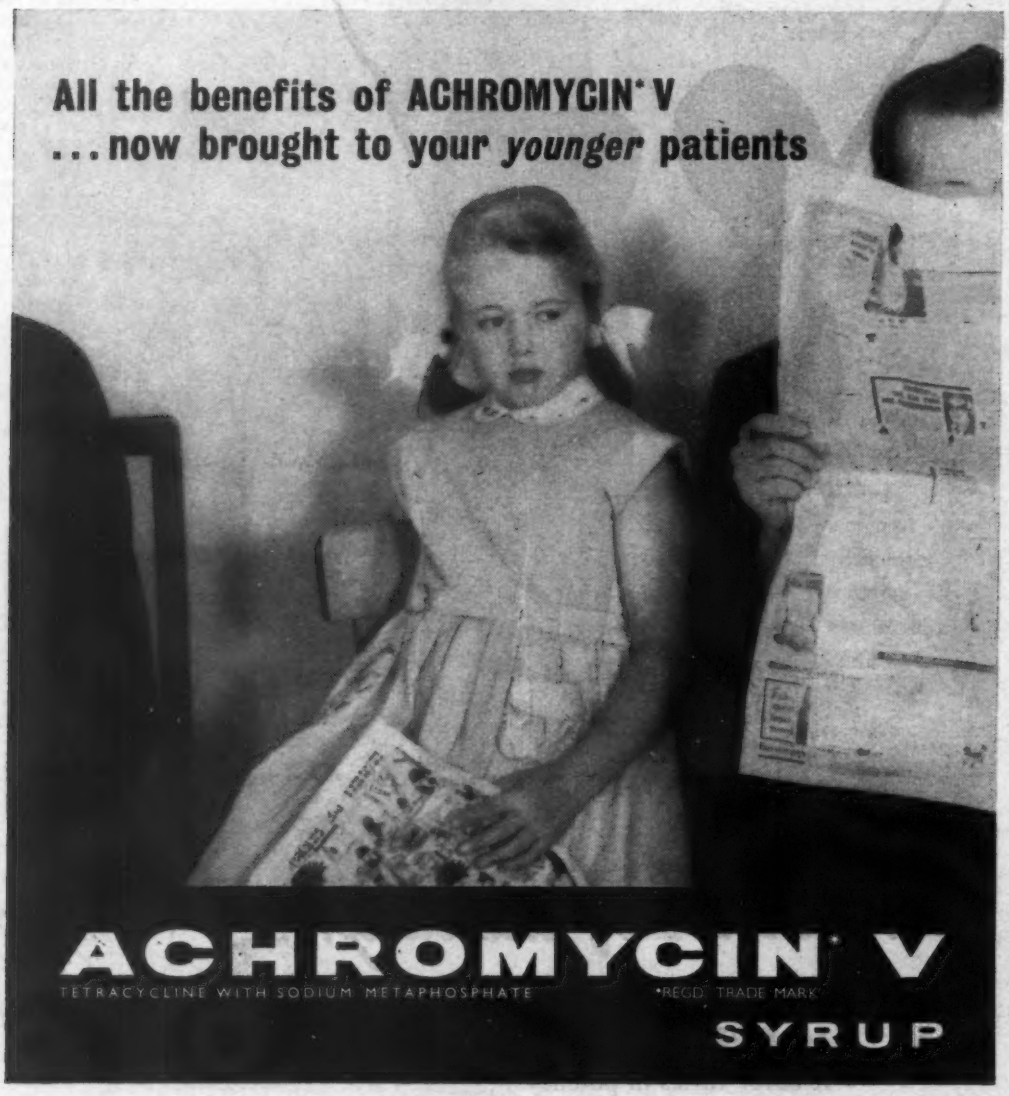

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ACUTE RHEUMATIC FEVER IN CHILDREN

A COMPARISON OF SIX FORMS OF TREATMENT IN 200 CASES

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From the Department of Child Health, the University of Sheffield

With Statistical Addendum by

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AT the Children's Hospital, Sheffield, we have conducted a series of controlled studies of the treatment of rheumatic fever (table I). In the first study (Illingworth et al. 1954) we compared the effect of salicylates in high dosage with bed rest alone without special treatment, and found that salicylates were of value. We then took part in the Anglo-American trial of hormones (corticotrophin or cortisone) compared with salicylates in low dosage (Coöperative Clinical Trial 1955). This trial did not show any significant difference between the three groups. We then conducted a controlled study of cortisone with salicylates in high dosage compared with salicylates alone in high dosage and salicylates alone in low dosage (Holt et al. 1954), and found that the combined treatment was superior to salicylates alone.

Our last study, which has not been published, was a comparison of cortisone and salicylates in high dosage, cortisone and salicylates in low dosage, and cortisone alone. In this series we treated 45 children, 15 in each group, but as the numbers were small and all children responded well, the differences did not reach statistical significance, though they suggested the superiority of the combination of cortisone with salicylates in high dosage over the other two forms of treatment. As we had treated several other children by the same methods in earlier studies, or in periods between investigations, we had in fact a much larger series to study. In addition, some children had had unquestionable rheumatic fever, but they could not be included in the controlled studies because the number of criteria present on any one day was insufficient.

The Series

We analyse here our total experience of the treatment of rheumatic fever in the past nine years, using six different forms of treatment. The whole series comprises 200 children: 145 were part of one or other controlled study ("controlled cases"), and 55 were "extra" cases, who, for reasons stated, were not included in the main series. In all analyses we kept the "controlled" and "extra" cases separate, but they have been combined where statistically legitimate for the purposes of this paper. Statistical significance, in the text, is assessed throughout at the 5% level.

TABLE II—COMPARISON OF CONTROLLED AND EXTRA CASES

—	Controlled	Extras
Total	145	55
Mean age (yr.)	9·1	9·4
Males (%)	48	51
New cases (%)	86	78
Duration of symptoms before admission 30 days or less (%)	83	56
Arthritis, recent or on admission (%)	93	98
Carditis on admission (%)	77	71
Diastolic murmur on admission (%)	29	47
Chorea on admission (%)	7	4
Temperature over 100°F on admission (%)	62	20
E.S.R. (mm. in 1st hour):		
Mean (all cases)	52	46
" (O)	48	49
" (HS)	49	47
" (CLS)	55	48
" (CHS)	58	47
Over 20 mm. (%)	100	100
Over 30 mm. (%)	93	91
Died in acute stage	2	1

In some cases a child was included in one study in his first attack and in a subsequent study in a relapse, but for the purposes of this paper we have not included any child twice, and if a child relapsed, his first attack alone is discussed.

All children on admission had an erythrocyte-sedimentation rate (E.S.R.) over 20 mm. in the first hour (Westergren, micro-method), or, in the case of 17 children in the Anglo-American coöperative study, 30 mm. or over (Wintrobe).

TABLE I—STUDIES OF THE TREATMENT OF RHEUMATIC FEVER: 1948–56

Investigation	No. of children studied in each treatment-group: No specific drug (O)	Salicylates in low dosage (LS)	Salicylates in high dosage (HS)	Cortisone, corticotrophin, or prednisolone (C)	Cortisone with salicylates in low dosage (CLS)	Cortisone with salicylates in high dosage (CHS)	Result	Reference
A	28	..	27	..	..	..	HS better than O	Illingworth et al. (1954)
B*	..	5	..	12	..	..	No significant difference	Coöperative Clinical Trial (1955)
C	..	10	10	..	..	10	CHS better than LS or HS	Holt et al. (1954)
D	..	..	..	15	15	15	No significant difference: numbers too small. Trend favours CHS and CLS	Not published
Extra cases not in above series	14	1	24	..	8	8	..	..
Total	42	16	61	27	23	33	..	..
Total included in present paper†	42	16	61	27	22	32	..	..

* These figures refer only to children seen by us and included in the Coöperative Trial.
† No child is included twice—i.e., in different studies.

TABLE III—SERUM-SALICYLATE LEVELS

Group	No. of estimations	Mean serum-salicylate (mg. per 100 ml.)
LS	87	11·5
HS	615	32·0
CLS	39	11·3
CHS	225	33·5

Comparison of Controlled and Extra Cases

In the controlled cases the criteria for inclusion were those suggested by Duckett Jones (1944). When a child satisfied the criteria the method of treatment was chosen by random sampling. 85% of the children were admitted to the study within three days of admission.

At the time of admission, the age and sex distribution, the proportion of cases in their first attack, the incidence of arthritis, carditis, and chorea, and the mean E.S.R. were much the same in the two groups (table II). In the extra cases the duration of symptoms before admission was longer, the proportion with a temperature on admission of over 100°F was lower, and the proportion with a diastolic apical murmur on admission was higher. When the controlled and extra cases within the various treatment groups were compared, it was found that they too were comparable. It will be noted that in 98% of the extra cases the child had arthritis.

More detailed comparability tests were done on the controlled and extra cases (described in the addendum). As a result, the two groups of cases have been analysed together for the study of the rate of fall of E.S.R.; but they were excluded from the analysis of the rate of fall of the temperature because of a tendency of the "extra" children to be given drug treatment later than the others.

Age at Onset

The age at onset of rheumatic fever was as follows:

Age at onset (yr.)	*No. of cases*	*Age at onset (yr.)*	*No. of cases*
2	1	9	21
3	2	10	25
4	8	11	24
5	7	12	17
6	24	13	19
7	20	14	1
8	31	Total	200

The peak age was 8 years. The youngest child was 2 years and 4 months. She was admitted with an acute illness of six days' duration, with fever, polyarthritis, leucocytosis, and raised E.S.R. While she was in hospital a grade-2 apical systolic murmur developed (Levine and Harvey's classification, 1949), increasing to grade 4. A throat-swab grew β-hæmolytic streptococci. The blood-culture was sterile. The QT_C interval in the electrocardiogram (E.C.G.) was prolonged. The murmur had disappeared when she was seen a year after admission. The whole course was typical of rheumatic fever.

2 children were just under 4 years of age on admission. Both had polyarthritis, carditis, and fever. 1 died, and the diagnosis was confirmed at necropsy. The other had rheumatic nodules.

TABLE IV—COMPARISON BETWEEN GROUPS

	Group					
	O	LS	HS	C	CLS	CHS
Controlled cases	28	15	37	27	14	24
Extras	14	1	24	0	8	8
Total	42	16	61	27	22	32
Mean age (yr.)	9	9	9	9	8	9
Male (%)	45	69	54	33	60	37
New cases (%)	81	69	79	89	100	87
Duration of symptoms 30 days or less (%)	74	81	72	78	86	72
Mean interval between admission to hospital and admission to study (days)	..	2	2	2	2	3
Percentage admitted to study within 3 days of admission to hospital	..	94	80	88	85	83
Carditis on admission (%)	67	81	82	82	50	81
Diastolic murmur on admission (%)	28	31	38	40	18	41
Pericarditis on admission	1	0	2	1	0	1
Rheumatic nodules on admission	1	7			9	
Chorea on admission	2	8			1	
Temperature 100°F or more on admission (%)	40	69	41	67	41	50
Mean E.S.R. (mm. in 1st hour)	47	49	48	53	52	55
Over 30 mm. (%)	91	94	93	93	100	94

Methods of Treatment

The six treatment-groups were as follows:

Group O (42 children).—No specific treatment.

Group LS (16 children).—Sodium salicylate in low dosage—i.e., gr. 5 (0·3 g.) q.i.d. up to 50 lb. body-weight, gr. 10 (0·6 g.) t.i.d. if 50 lb. or more.

Group HS (61 children).—Salicylates in high dosage by mouth—i.e., sufficient to maintain the serum-salicylate level at 30–40 mg. per 100 ml. The dose was gr. $1^1/_2$ (0·1 g.) per lb. per day at first, and was then repeatedly adjusted to maintain the desired level. Aspirin was used in place of sodium salicylate if there was heart-failure.

Group C (27 children).—Hormones alone, mainly cortisone. The daily dose of cortisone was 300 mg. (first day), then 200 mg. for four days, 100 mg. for sixteen days, 75 mg. for the fourth and fifth weeks, and 50 mg. for the sixth week. Prednisolone was used in certain children after February, 1956, in a fifth of the above dosage. Corticotrophin was given in a total daily dose of 80 units for the first four days, 60 units for the next three days, 40 units for the second and third weeks, 30 units for the fourth and fifth weeks, and 20 units for the sixth week.

Group CLS (22 children).—Cortisone or prednisolone (dosage as in C) with salicylates in low dosage (as in LS).

Group CHS (32 children).—Cortisone or prednisolone (dosage as in C) with salicylates in high dosage (as in HS).

The serum-salicylate was estimated in children of all groups taking the drug (table III).

Specific treatment was continued until there were three consecutive weekly normal E.S.R.s (10 mm. or less, Westergren), or for three months, whichever period was shorter. The Anglo-American coöperative-trial cases were exceptions (5 children in LS and 12 in C): in all these the treatment lasted for six weeks, irrespective of the fall in the E.S.R. In some of group HS the salicylate treatment was continued indefinitely until the E.S.R. fell to normal.

A second course of treatment was given if there were three consecutive weekly E.S.R.s of over 20 mm. per hour after the end of the first course.

All children received anti-streptococcal treatment—in the coöperative study, sulphonamides, in the other children, sulphonamides or parenteral penicillin in the first week, followed by daily oral penicillin for an indefinite number of years thereafter. We now give penicillin only. Apart from this, and from the differences in specific treatment in the six groups, the treatment and general management was identical in all children.

7 children were transferred from one treatment-group to another because of unsatisfactory progress. 5 of these were in group O, 1 in LS, and 1 in HS. Those in O were transferred on the 2nd, 28th, 41st, 48th, and 300th days after admission. The first of these was gravely ill with pericarditis and pneumonia, and was transferred to the high-salicylate group. He became rapidly worse, and after developing Cheyne-Stokes respirations, and being thought to be moribund, he was given intravenous corticotrophin and made a dramatic and totally unexpected recovery.

The children from the other two groups were transferred to cortisone treatment on the thirty-seventh and sixtieth days because of unsatisfactory progress, and responded well. When patients were transferred from their original group the data after transfer have not been used for the analysis.

On discharge from the Children's Hospital the children went to the Rheumatic Fever Hospital School, where one of us was responsible for the medical care, and thereafter were followed up by one of us in the school heart clinic or at the Children's Hospital.

TABLE V—RESULTS OF TREATMENT IN FIRST ATTACK

—		Cortisone groups			Salicylate groups		O	Significant differences (and level of significance)
		CHS	CLS	C	HS	LS		
E.S.R. (excluding Wintrobe cases)	Mean fall in 1st week (mm. in 1st hour)	34·1 (±5·6)	27·9 (±4·8)	32·7 (±6·9)	12·7 (±4·2)	13·0 (±11·7)	11·6 (±4·9)	CHS, CLS, C > HS, LS, and O (1%)
	Mean fall in 1st fortnight (mm. in 1st hour)	48·4 (±5·3)	39·9 (±5·8)	47·6 (±6·9)	18·8 (±4·0)	28·8 (±10·8)	16·6 (±6·5)	CHS, CLS, C > HS, LS, and O (1%)
	No. of cases*	26	21	13	53	5	30	
E.S.R. (including Wintrobe cases)	Typical† day of 1st normal	15·3 (13·4, 17·4)	17·8 (13·3, 23·8)	18·6 (15·1, 23·0)	33·5 (27·9, 40·1)	36·2 (26·0, 50·4)	68·3 (50·4, 92·5)	CHS, CLS, C < HS, LS < O (1%)
	Typical† day of 1st of 3 normals	15·6 (13·6, 18·0)	23·2 (16·6, 32·3)	25·6 (18·7, 35·0)	51·8 (41·9, 64·0)	38·9 (27·4, 55·4)	91·7 (66·2, 1270)	CHS, CLS, C < HS, LS < O (1%) CHS < CLS, C (5%)
	Normal by 15th day (%)	67 (46, 84)	41 (21, 64)	43 (23, 66)	7 (2, 17)	9 (0, 41)	0 (0, 12)	CHS, CLS, C > HS, LS, and O (1%)
	Normal by 29th day (%)	100 (87, 100)	68 (45, 86)	52 (30, 74)	32 (20, 46)	36 (11, 69)	10 (2, 27)	CHS > CLS, C > HS, LS (1%). HS, LS > O (5%)
	No. of cases*	27	22	23	57	11	33	
Temperature	Mean fall in two days following start of specific treatment (deg.)	2·2 (±0·6)	1·4 (±0·7)	1·9 (±0·8)	1·2 (±0·5)	1·4 (±0·8)	0·4 (±0·4)‡	CHS, CLS, C > HS, LS > O (5%)
	Mean no. of days to reach and stay normal from start of specific treatment	6·7 (±1·8)	5·3 (±2·4)	5·9 (±2·3)	5·9 (±1·4)	7·2 (±3·5)	5·8 (±2·2)	..
	No. of cases*	22	14	22	34	10	24	
Arthritis	Typical† duration (days)	2·0 (1·5, 2·6)	1·5 (1·2, 1·9)	2·3 (1·7, 3·1)	3·5 (2·5, 4·8)	3·8 (2·5, 5·7)	6·9 (4·1, 11·6)	CHS, CLS, C < HS, LS (1%). HS, LS < O (1%)
	No. of cases	16	10	15	25	13	20	

* The number of cases available for analysis of any particular variable is slightly smaller than stated here, because of occasional gaps in the data.
† Typical: obtained from mean of logs, since the ordinary arithmetic mean is not typical (see statistical addendum).
‡ Fictitious date of starting treatment, used to secure strict comparability with other groups (see statistical addendum).

Method of Investigation

A proforma was used for the day-to-day records. The E.S.R. was measured weekly until there were five consecutive normal readings: it was then measured fortnightly for two months and monthly until discharge from the Rheumatic Fever Hospital School. E.C.G. and X-ray studies were made at fixed intervals after admission. Follow-up studies, including physical examination, screening, and E.C.G., were done at set intervals after admission. In about 80 of the children, constituting two of the controlled studies, it was arranged that the final follow-up examination should be carried out by a member of the team who was not concerned with the routine follow-up of the patients and who did not refer to the notes to find out what treatment had been given or what the previous cardiac findings had been.

We graded all murmurs, using the classification suggested by Levine and Harvey (1949).

Comparison of the Six Treatment Groups

There was no significant difference between the six groups with regard to age, duration of symptoms before admission, or the mean E.S.R. (table IV); but fewer children in group CLS had carditis than children in the other groups.

Results

Duration of Arthritis

The duration of arthritis was significantly less in the cortisone groups than in the salicylate groups, and less in the salicylate groups than in O (table V).

None of the children in groups CLS and CHS had arthritis for more than five days after starting treatment: the proportion of children in the other groups (C, HS, LS, O) having arthritis for more than five days was 13%, 32%, 31%, and 50% respectively.

Rate of Fall of Raised Temperature

The temperature fell significantly more rapidly in the cortisone groups than in the salicylate groups, and more rapidly in the latter than in O (table V).

Development of New Rheumatic Manifestations During Treatment

By rheumatic manifestations we mean arthritis, nodules, chorea, heart-failure, or pericarditis developing during the course of treatment after the first week (table VI). These manifestations developed in 9 children in group O (21%), 6 of the salicylate cases (7·8%), and none of the cortisone (C, CLS, CHS) cases. The difference between the cortisone and salicylate cases is statistically significant.

The Heart

The findings six months after admission have not been described, for they did not seem to contribute additional information. The findings at two years and subsequently have not been given because of the small number of

TABLE VI—DEVELOPMENT OF NEW MANIFESTATIONS OF RHEUMATIC ACTIVITY (OTHER THAN CARDIAC MURMURS) (Shown as figure indicating day on which the manifestation developed)

Group	Case	Arthritis	Nodules	Chorea	Heart-failure	Pericarditis
O	1	290	..	120	..	..
	2	..	..	..	35	..
	3	..	..	260	..	..
	4	..	64	..	..	..
	5	..	36	14	..	..
	6	..	..	..	120	..
	7	..	90	..	..	..
	8	25	..	..	..	..
	9	30	..	..	..	..
LS	1	..	11, 42	..	..	..
HS	1	60	..	..	..	..
	2	..	84, 120	..	..	..
	3	..	12, 40	43	..	..
	4	..	..	90	..	..
	5	..	..	..	..	24
C, CLS, CHS	None	..	..	..	..	..

TABLE VII—ORGANIC CARDIAC MURMURS AT THE 3RD AND 12TH MONTH AFTER ADMISSION TO STUDY

Organic murmur on admission (category)	Group	N (new) or R (relapse)	Organic murmurs 3 months after admission: No. at risk	None	Apical systolic only	Diastolic	Organic murmurs a year after admission: No. at risk	None	Apical systolic only	Diastolic
(1) No murmur	O	N	13	12	1	0	11	10	1	0
		R	0	0	0	0	0	0	0	0
	LS + HS ..	N	13	10	3	0	12	11	1	0
		R	1	0	1	0	1	0	1	0
	C	N	5	5	0	0	4	4	0	0
		R	0	0	0	0	0	0	0	0
	CLS + CHS	N	17	17	0	0	11	11	0	0
		R	0	0	0	0	0	0	0	0
(2) Organic apical systolic murmur only	O	N	12	2	8	2	12	5	7	0
		R	3	1	0	2	2	2	0	0
	LS + HS ..	N	27	7	18	2	26	15	11	0
		R	4	0	3	1	3	0	2	1
	C	N	10	3	7	0	8	3	4	1
		R	1	1	0	0	1	1	0	0
	CLS + CHS	N	18	14	4	0	13	12	1	0
		R	2	1	1	0	1	1	0	0
(3) Diastolic murmur	O	N	6	0	2	4	6	0	2	4
		R	4	0	1	3	4	0	3	1
	LS + HS ..	N	17	1	7	9	17	5	7	5
		R	11	2	0	9	11	2	3	6
	C	N	9	1	4	4	7	2	4	1
		R	2	0	1	1	2	0	1	1
	CLS + CHS	N	12	3	5	4	9	4	3	2
		R	3	0	0	3	2	0	0	2

hormone-treated cases which have been followed up for long periods.

We divided the children into three categories, according to the cardiological findings on admission.

(1) No murmur or other clinical or electrocardiographic evidence of carditis.

(2) Organic apical systolic murmur.

(3) Diastolic murmur, mitral or aortic, with or without a systolic murmur.

We then analysed the findings at three and twelve months in a similar way, dividing them into groups according to whether they were in first or subsequent attacks ("new" or "relapse"), controlled or extra cases, with symptoms of short or long duration. The findings in each category were these (table VII):

(1) No clinical evidence of carditis on admission, no murmur. Of 27 cases (new and relapse) in this category in O, LS, and HS, 5 were thought to have organic murmurs at three months: none of the 22 children in C, CLS, or CHS had a murmur.

(2) Organic apical systolic murmur on admission (new cases only). Of 12 children in O, 2 had lost their murmur by three months, as compared with 14 of 18 children in CLS and CHS. This difference is statistically significant. By that time, a diastolic murmur had developed in 2 children in O, but in none of the cortisone (C, CLS, CHS) children.

At a year, 5 out of 12 children in O, 15 of 26 in LS and HS and 12 of 13 in CLS and CHS had no residual murmur. The difference between the CLS-CHS group, and the LS-HS-O group is of statistical significance.

(3) Diastolic murmurs (new cases only). 2 of 6 children in O, 8 of 18 in LS and HS, and 13 of 21 in C, CLS, and CHS had lost their diastolic murmur at the end of three months. These differences are not significant.

When categories (2) and (3) are combined (new cases only), 2 of 18 children in O lost all murmurs (systolic or diastolic) by three months, as compared with 8 of 44 children in LS and HS (18·2%), and 21 of 48 children in C, CLS, and CHS (43·7%). The difference between the three cortisone groups and the two salicylate groups or the O group is statistically significant. Furthermore, when the cortisone groups are analysed separately, it is found that 4 of 19 children in C (21%) had lost all murmurs by three months, compared with 17 of 29 children in CLS and CHS (59%): this difference is statistically significant, indicating the superiority of combined treatment as compared with cortisone alone.

At a year, 5 of 18 children in O (28%) had lost all murmurs, compared with 20 of 43 children in LS and HS (47%) and 15 of 20 children in CLS and CHS (75%). The difference between CLS-CHS and LS-HS is statistically significant.

When categories (1) and (2) are combined (new and relapse cases), it is found that 5 of 28 children in O had acquired a diastolic murmur by three months (18%), compared with 7 of 45 children in LS and HS (16%) and none of 43 children in C, CLS, and CHS. The difference between the three cortisone groups and the salicylate groups is of statistical significance.

It may be concluded that there is statistically significant evidence that cortisone, with or without salicylates, reduced the risk of the development of systolic and diastolic murmurs and increased the likelihood that organic murmurs and other signs of carditis would be lost. Cortisone, when combined with salicylates, is more effective in this respect than salicylates alone. Salicylates are more effective than nothing at all.

The importance of early treatment was indicated by the fact that only 2 of the 8 children who had had symptoms for over thirty days before admission in the three corti-

TABLE VIIIa—ERYTHROCYTE-SEDIMENTATION RATE

(Percentage with first normal reading at certain periods after admission to study (including extra cases and those in second or later attacks))

Group	Days after admission to study: 8	15	22	29	36	43	70	90
O ..	0	0	12	19	22	29	56	61
LS ..	0	6	31	31	50	69	94	94
HS ..	2	13	31	52	68	78	95	95
C ..	11	48	74	85	89	93	96	100
CLS ..	23	59	82	96	96	96	96	100
CHS ..	13	66	93	100	100	100	100	100

TABLE VIIIb—ERYTHROCYTE-SEDIMENTATION RATE

(Percentage with first of three consecutive normal readings at certain periods after admission to study)

Group	Days after admission to study: 8	15	22	29	36	43	70	90
O ..	0	0	8	11	11	14	39	47
LS ..	0	6	25	25	44	63	94	94
HS ..	0	7	20	32	42	45	73	81
C ..	11	41	41	48	70	77	92	92
CLS ..	24	62	81	86	86	86	86	86
CHS ..	13	63	90	100	100	100	100	100

sone groups had lost all murmurs when seen a year after admission, as compared with 20 of 30 children who had had symptoms for less than thirty days. This difference is of statistical significance.

Deaths

There was 1 death in HS—a boy aged 3 years (to whom we have already referred) who died six days after admission. There were 2 deaths in CHS—a child aged 7 years who died on the eighth day after admission, and a child aged 6 years who died on the third day. All 3 were admitted in heart-failure with a fulminating attack.

Rate of Fall of E.S.R.

All symptoms, including fever and arthritis, disappeared in all children long before their E.S.R. returned to normal. For this reason the analysis of the rate of fall of the E.S.R. gives a fair picture of the response to treatment.

By the fifteenth day after admission to the study, no child in group O had achieved a normal E.S.R. (tables VIIIa and VIIIb), while 6% in group LS and 13% in group HS had a normal reading; but the figures in groups C, CLS, and CHS were respectively 48%, 59%, and 66%. By the 29th day all the children in CHS had had a normal E.S.R., compared with 52% in HS, 31% in LS, and 19% in O.

Table V gives the results of a more precise statistical analysis. This includes only children in their first attack,

TABLE IX—DURATION OF SPECIFIC TREATMENT AND OF STAY IN HOSPITAL

Group	Specific treatment (percentages)				Stay in hospital (percentages)	
	4 weeks or less	5 to 6 weeks	7 to 12 weeks	13 weeks or more	Less than 6 months	A year or more
O	..	..	..	..	29	27
LS+HS	4 (4)	22 (28)	56 (51)	18 (16)	34	14
C	53 (29)	0 (44)	27 (15)	20 (12)	52	8
CLS+CHS	54	33	7	6	87	2

The figures in parentheses are the percentages when cases from the Anglo-American series are included.

because the E.S.R. tended to fall more slowly in second or subsequent attacks. The E.S.R. fell significantly more quickly in the three cortisone groups than in the salicylate groups, and in CHS than in C and CLS. The difference between CLS and C is not significant. The E.S.R. fell significantly more rapidly in LS and HS than in O, though the difference is not as great as that between the three cortisone groups and the two salicylate groups. There is no significant difference between LS and HS.

To determine whether the duration of symptoms before admission affected the response of the E.S.R. to treatment, the children were divided into two groups —those with symptoms lasting less than thirty days before admission, and those with symptoms lasting thirty days or more before admission. There was no significant difference in the rate of fall of the E.S.R. between these two groups under any form of drug therapy.

The rebound phenomenon, consisting in a temporary rise of the E.S.R., occasionally with other clinical signs, was noted in many children when treatment was discontinued. A rebound was noted in 1 child in LS (6%), 17 in HS (28%), and 30 of C, CLS, and CHS (38%). One of us (Holt 1956) specially studied the rebound phenomenon, and showed that it was often associated with an occult streptococcal infection or with dental sepsis; but, in the present series, it should be noted that in many of the children in the cortisone groups the treatment was discontinued while the dosage of cortisone was still high. In 42 children the dosage before discontinuance of the cortisone was 75 mg. a day, and in 10 children 100 mg. a day.

6 children in the cortisone groups who showed the rebound phenomenon had to have a second course of treatment because the E.S.R. was over 20 mm. per hour on three consecutive weekly occasions after the cessation of treatment.

There was an interesting relationship between the rate of fall of the E.S.R. and the child's weight. This is the subject of another paper (p. 659).

The duration of specific treatment and of stay in hospital is in large part related to the fall of the E.S.R. (table IX). About 54% of the children treated with cortisone (with or without salicylates, and excluding those children in the coöperative trial) had completed treatment within four weeks of admission, compared with 4% in LS and HS. This difference is statistically significant. The duration of stay in hospital was correspondingly reduced in the cortisone cases.

Discussion

The value of cortisone in rheumatic fever has been assessed many times, but most reports did not include controls, and no firm conclusion can therefore be made.

An exception to this is the Anglo-American Coöperative Trial, when it was found that the E.S.R. settled more quickly in the hormone-treated groups than in those treated with aspirin. Soft apical systolic murmurs disappeared more rapidly in the hormone treated groups, but there was no significant difference at a year. The P–R intervals in the E.C.G. decreased more frequently and more rapidly in the hormone groups than in the aspirin group, but the proportion with residual cardiac damage at a year was identical. There was no difference in the rate of fall of temperature between the three groups.

Almost all other studies have found cortisone very valuable. Massell (1954) reviewed all relevant articles in English published between April, 1949, and January, 1954. In nearly every report, arthritis and fever responded rapidly, the E.S.R. fell quickly (as a result more of a suppressive action on the rheumatic process than of changes in the plasma-proteins), and the incidence of carditis was reduced. Greenman et al. (1955) and Roy and Massell (1956) found that cortisone reduced the incidence of carditis if given in adequate doses early enough in the disease.

Wiesener (1957) in Germany treated 21 children suffering from rheumatic carditis with a combination of 80–100 mg. of corticotrophin daily and with large doses of aminopyrine and felt that the combined treatment was better than either corticotrophin or aminopyrine alone. He had, however, no comparable controls. In two-thirds of his patients who received the combined treatment the E.S.R. returned to normal within two weeks. On discontinuation of the corticotrophin the rebound was slight and short-lasting.

May Wilson (1953) remarked "I find it very difficult to understand why there is any question as to the value of hormone therapy in active carditis."

We have shown that cortisone is superior to salicylates in the treatment of rheumatic fever, and that cortisone combined with salicylates, especially in high dosage, is superior to cortisone alone. It is unfortunate, therefore, that there are still many centres in this country in which the standard treatment for rheumatic fever is salicylates alone. We fully realise, of course, that many years' observation would be required to discover the ultimate value of cortisone in reducing the incidence of carditis. But it seems reasonable that, if there is less carditis in cortisone cases a year after the onset of the rheumatic fever, there will be less ten years after.

As with any treatment, the toxic action of the drugs used must be remembered. Salicylates in high dosage are dangerous, but we have not had a mishap with any of the children whom we have treated in this way. The treatment requires very careful supervision and frequent serum-salicylate estimations (Holt 1954). The dangers of cortisone are well known (Robinson et al. 1956, Good et al. 1957). In the 81 children treated by cortisone in this series we had no serious complications, though

we have seen very severe hæmatemesis in a child treated elsewhere with prednisolone. We feel strongly that treatment with cortisone, and particularly cortisone combined with salicylates in high dosage, should on no account be given in the patient's home. Expert and continuous supervision, with full laboratory facilities, are essential. The child must be in hospital.

Summary

We report the effect of six different forms of treatment of acute rheumatic fever in children. The series comprises 200 cases, and summarises the experience gained in planned studies over the past nine years.

We have provided statistically significant evidence that:

(1) Cortisone combined with salicylates in high dosage caused a more rapid fall of the erythrocyte-sedimentation rate than any of the other treatments given. Cortisone alone or combined with salicylates in high or low dosage was more effective than salicylates alone, and salicylates alone were more effective than no specific treatment. There was no significant difference between salicylates in low dosage and salicylates in high dosage. Largely as a result of the more rapid fall of the E.S.R., the duration of treatment and of stay in hospital was significantly less in the three cortisone groups than in the salicylate groups.

(2) The duration of arthritis was less in the cortisone groups than in the salicylate groups, and less in the salicylate groups than in the "no-treatment" group.

(3) New rheumatic manifestations (nodules, heart-failure, pericarditis, chorea, or arthritis) did not develop during treatment in the cortisone groups, and the difference in this respect from the salicylate cases was statistically significant.

(4) Cortisone cases fared better than all other cases with respect to carditis. More children having cortisone with salicylates lost organic systolic murmurs than did children receiving salicylates alone: more children in the three cortisone groups than in the salicylate groups lost diastolic murmurs. Children fared better when given cortisone with salicylates than when given cortisone alone. Significantly more children in the cortisone groups lost all evidence of carditis when they were admitted for treatment less than thirty days after the onset of rheumatic fever than did those admitted later.

(5) The temperature fell more quickly in the cortisone groups than in the salicylate groups, and more quickly in the salicylate groups than in the no-treatment group.

We conclude that cortisone combined with salicylates, especially in high dosage, was more effective than any of the other treatments given, including cortisone alone: but that cortisone alone was superior to salicylates alone.

We think it essential to treat all children with rheumatic fever in hospital as early as possible after the onset of the disease, to afford them the maximum benefit of intensive treatment with the least risks from possible complications.

We wish to thank our pædiatric friends, Dr. C. C. Harvey, Dr. M. Middleton, Dr. T. Colver, and Dr. L. A. Hawkins for allowing us to treat their children with rheumatic fever. Miss E. Finch estimated the serum-salicylates, and Dr. J. L. Emery the antistreptolysin titres. We also wish to thank the many family doctors who referred their patients to us.

Statistical Addendum

Before any attempt was made at assessing the effect of treatment on E.S.R. results, comparability tests were carried out within treatment groups to find how far it was justifiable to combine "extra" cases with controlled cases, and relapsed cases with new cases. The tests involved the following variables: age; weight; E.S.R. (1), E.S.R. (8), E.S.R. (15); E.S.R. (1–8), E.S.R. (1–15); day of 1st normal E.S.R., day of 1st of three successive normal E.S.R.s. The test used was analysis of variance comparing means. For the last two variables mentioned, the mean logarithm was used, since the distributions involved appeared to be very slow, with occasional very large values which inflated the estimates of error and made the arithmetic mean untypical. The "typical" measure quoted in table v is in fact the antilog of this mean log (i.e., the geometric mean) and is much more satisfactory from this point of view.

From these tests is was concluded that the extra cases were comparable with the controlled cases, but that the relapsed cases differed significantly from the new cases in the following respects:

(i) Their mean age was greater by $1^1/_2$ years, on the average.

(ii) Their mean E.S.R. fell markedly less and on the 15th day was about 30% higher than for the new cases.

(iii) In two groups (CHS and O) they took longer to reach and maintain a normal E.S.R.

It was therefore decided to analyse the E.S.R. results of the extra and controlled new cases together, excluding patients in their second or subsequent attacks. The latter were too few in number (24 altogether) to permit of satisfactory analysis as a group on their own, but the application to them of the conclusions drawn from the new cases was examined at various stages to see whether they showed any marked inconsistency with new cases in their responses to the different treatments.

The confidence limits given in table v correspond approximately to a 95% probability of including the hypothetical long-run value. For the ordinary mean, they are plus or minus twice standard error limits, the standard errors being calculated for the particular set of results to which the limits are attached; for the geometric means, they are deduced from such limits for the mean logarithm. For the percentages, they are limits for the expectation deduced from Fisher and Yates's tables. The conclusions relating to significance in the right-hand column of table v were, however, deduced from careful analysis of variance tests or chi-squared contingency tests. The 5% and 1% levels of significance were used in these tests.

The numbers in parentheses beside the entries in the table are statistically deduced confidence limits indicating the trustworthiness (within 95% probability) of the entries in the table, as indications of the results which might be expected if the numbers in the treatment groups were many times greater.

Significant differences between the groups can be seen in the table. These may largely be verified from the table itself by noting whether or not the confidence limits for comparable means, &c., overlap, though they were actually tested by more rigorous and sensitive tests of significance (e.g., analysis of variance, χ^2 test, &c.).

The temperature results were analysed at a later stage, and certain additional tests of comparability were carried out before attempting to assess the effect of treatment. It was found that in the extra HS and CLS extra cases the date of starting treatment was significantly later, by about three days, than in the controlled cases; and since the differences in the temperatures appeared to be concentrated in the first few days after admission it was considered advisable to omit them from analysis. The very few other treated extra cases (1 LS case and 4 CHS cases) were also omitted from analysis as a safety measure, and comparison of treatments confined to the controlled cases. However, in the O group there was a substantial number (12) of extra cases, and here the "date of starting treatment" did not apply. After a test of homogeneity, controlled and extra cases were accordingly combined, and included in the analysis assessing the effect of treatment on temperature. The mean fall in temperature over the two days following the start of treatment which from study of the graphs appears to be a promising criterion was then compared between treatments. In the O group, since temperature tends to fall anyway once the patient is put to bed, comparability was assured by assigning a fictitious date of treatment to each case by matching it with a treated case having a similar pretreatment temperature pattern; care was taken to avoid bias in the matching, due to possible dependence of the date of starting treatment on the initial temperature pattern.

The results given in table v for temperature are contributed to by a number of cases having normal temperatures (i.e., not greater than 98·6°F) throughout treatment. There is a case for excluding these, on the grounds that they tend to dilute the results for cases showing an appreciable fall in temperature; on the other hand there is a case for including them, on the grounds that if their temperatures could not fall, at least they did not rise, unlike those of some of the cases with temperatures initially normal; and also on the grounds that the cases were allocated to their treatments at random, so that any inappropriateness in their inclusion does not affect the statistical

validity of the comparison, but only the absolute interpretation of the actual means presented in table v. As a check, the analysis was repeated with these cases excluded; the pattern of differences was effectively unchanged, but the significance of the differences reduced a little; the agreement was good enough to allow the results in table v to stand. It was felt that the nature of the data did not justify a more elaborate study of temperature variations at this stage; any such study would have to be very complicated, since the temperature patterns are very individual in character.

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CORTISONE TREATMENT OF RHEUMATIC FEVER

RELATIONSHIP OF WEIGHT TO THE SPEED OF FALL OF ERYTHROCYTE-SEDIMENTATION RATE

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WHILE analysing data in connection with a study of six different forms of treatment of acute rheumatic fever (Illingworth et al. 1957), one of us (R. S. I.) made a simple calculation to determine whether the state of a child's nutrition, as assessed by his weight in relation to his age, had any influence on the response to treatment. Using the figures of Gore and Palmer (1949) for the average, the children were divided into three weight-groups:

(i) 10% or more above the average weight ("overweight").
(ii) 0–9·9% above or below the average weight ("average").
(iii) 10% or more below the average weight ("underweight").

The proportion of children in each group was then calculated whose erythrocyte-sedimentation rate (E.S.R.) had fallen to normal within 8, 15, 22, and 29 days of admission to the study. The figures used for the weight were those obtained on the child's admission. The analysis was made in two groups of children:

(i) Those treated with cortisone, prednisolone, or corticotrophin, either alone (C), or combined with salicylates in low dosage (CLS) or high dosage (CHS). There were 79 children in this group.
(ii) Those treated with salicylates alone in high dosage (HS) or low dosage (LS). There were 75 children in this group.

The children are the same as those described by Illingworth et al. (1957); 2 of the original 81 children in C, CLS, and CHS were excluded because they had died, and 2 in LS and HS were excluded—1 because of death, and the other because of absence of figures for weight on admission.

Children in their initial or subsequent attacks were included, but if a child was seen in both initial and subsequent attacks, the only figures used were those for the initial attack.

TABLE I—DISTRIBUTION OF WEIGHT-GROUPS WITHIN THE TREATMENT-GROUPS

Treatment group	Total	"Overweight" (%)	"Average" (%)	"Underweight" (%)
Salicylates, low dosage (LS)	16	12	38	50
Salicylates, high dosage (HS)	59	25	34	41
Total	75	23	35	43
Cortisone alone (C)	27	19	48	33
Cortisone with salicylates in low dosage (CLS)	22	27	50	23
Cortisone with salicylates in high dosage (CHS)	30	23	23	53
Total	79	23	39	38

Comparability of the Two Groups

None of the differences between the three weight-groups are statistically significant (tables I and II). Rather more of the underweight children were treated by CHS than were overweight children. The proportion of children who had had symptoms for a long period before admission was a little greater in the underweight groups receiving cortisone with or without salicylates. This would tend to decrease the difference between the overweight and underweight children with regard to the fall of the E.S.R., because the E.S.R. tends to fall more slowly in the children who have had symptoms for a long time before admission. Children in the overweight group receiving salicylates alone tended to be a little older than the underweight ones.

Results

Of the 30 underweight children receiving cortisone with or without salicylates, 73% had achieved a normal E.S.R. by the fifteenth day, compared with 55% of 31 children in the "average" group and 33% of the 18 overweight children (table III). The difference between the underweight and overweight children is statistically significant at the 5% level with a good margin to spare, though it does not quite attain the 1% level.

In view of the slightly (but not significantly) higher proportion of underweight children treated by CHS, the conclusion drawn from table III was checked by a rather more complicated analysis in which the percentages compared were similarly weighted averages of the percentages in the two treatment-groups CHS and C+CLS. The difference, though reduced slightly, remains significant at the 5% level. A regression study indicated that the slight difference in age-distribution in the weight-groups was of no importance.

TABLE II—COMPARABILITY OF THE WEIGHT-GROUPS

Variables	Cortisone groups (C, CLS, CHS)			Salicylate groups (LS, HS)		
	Overweight	Average	Underweight	Overweight	Average	Underweight
Total number	18	31	30	17	26	32
Age (mean)	8	8	9	10	9	9
Below 9 years (%)	44	42	37	18	42	44
Sex (% male)	39	38	50	47	50	66
Duration (% with symptoms for less than 30 days before admission to study)	78	84	68	59	85	72
Initial E.S.R. (mean)	53	53	54	47	46	49
Over 40 mm. in 1st hour (%)	83	84	83	65	77	74
In initial attack (%)	89	90	93	76	81	75

TABLE III—RELATION OF WEIGHT TO FALL OF E.S.R.

Treatment group	Overweight		Average		Underweight	
	Total	Normal E.S.R. by 15th day (%)	Total	Normal E.S.R. by 15th day (%)	Total	Normal E.S.R. by 15th day (%)
C, CLS, CHS..	18	33	31	55	30	73
LS, HS ..	17	24	26	8	32	9

Because of the possibility that the different rate of fall of the E.S.R. in the weight-groups could be explained by the fact that the overweight children were receiving the same dosage of cortisone as the underweight ones, the cases were broken down into three weight groupings (less than 50 lb., 50–89 lb., and over 90 lb.), within which the dose (constant) per unit weight varied much less than for the data as a whole. The numbers were too small for firm positive conclusions to rest on them, but the proportions with a normal E.S.R. by the fifteenth day remained consistently less in the overweight group, thus excluding inadequacy of dose in the overweight group as a possible explanation of the differences observed.

The actual breakdowns used were a good deal more detailed than the description given above would suggest, but gave no reason to modify the comments made. In addition to the above analysis, based on counts of cases achieving a normal E.S.R. by the fifteenth day, a multiple regression study was done of log. (first day normal) on weight and age. The results of this were not statistically significant, though they were consistent with the conclusions drawn above. Several patients in both groups had E.S.R.s which took a long time to return to normal, and these tended to inflate the error of the regression coefficient estimating the separate effects of age and weight.

In the conclusions above, return of the E.S.R. to normal by the fifteenth day was the criterion used for assessing the rate of fall of the E.S.R. If other days were chosen (e.g., the eighth, twenty-second, &c.), the underweight patients still fared better.

The different response of children treated by salicylates (table III) is striking. The underweight children fared no better than the overweight ones: such difference as exists favours the overweight children, but it is not of statistical significance. 24% of the overweight children had achieved a normal E.S.R. by the fifteenth day, compared with 8% of the "average" children and 9% of the underweight ones. Checks of comparability similar to those carried out in the cortisone cases gave no grounds for belief that this effect was due to differences in other variables.

Discussion

The more rapid fall of the E.S.R. in the underweight children receiving cortisone with or without salicylates, as compared with children of average or excessive weight, was unexpected, and the reason is not clear. Hubble (1957) suggests that the explanation may lie in the possibility that fat children need more cortisone to affect the pituitary-adrenal axis than do underweight children. It is particularly interesting that a similar effect was not observed in children treated by salicylates alone, and it adds confirmation to the usually accepted opinion that salicylates act in a different way from cortisone. If the mode of action is different, there is a rational basis for combining salicylates with cortisone in the treatment of rheumatic fever—a combination shown to be clinically advantageous (Illingworth et al. 1957).

Summary

The rate of fall of the E.S.R. in 18 overweight children receiving cortisone with or without salicylates was significantly slower than that in 30 underweight children, the rate of fall in 31 children of average weight falling in between.

By the fifteenth day of treatment the E.S.R. had fallen to normal in 75% of the underweight children, 55% of the children of average weight, and 33% of the overweight children. These differences were unrelated to any of the variables such as the age of the children, initial height of the E.S.R., or duration of symptoms. The difference could not be related to the dosage.

There was no corresponding significant difference in the rate of fall of the E.S.R. in the 75 children receiving salicylates alone. 24% of the 17 overweight children on this treatment had a normal E.S.R. by the fifteenth day, as compared with 9% of the 32 underweight children.

These results confirm the suggestion that salicylates act in a different way from cortisone, and are a reason for using both in treatment.

I wish to thank all the family doctors and consultants who have kindly referred children with rheumatic fever to us for treatment.

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ACUTE SEGMENTAL ULCERATIVE COLITIS

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THE clinical picture and the pathological findings in typical ulcerative colitis are well known, although its ætiology remains obscure; but some cases of non-specific inflammation of the colon are encountered which cannot be classified easily. Such cases of "atypical" colitis have been grouped under such names as "regional colitis," "regional segmental colitis," and "right-sided colitis." In addition Cooke and Brooke (1955) have described a specific disease entity of "ileocolitis," separate from ulcerative colitis with "backwash" into the ileum, on the one hand, and from regional ileitis which has spread into the cæcum and ascending colon, on the other.

It seems probable that the cases described under these various headings—e.g., the 201 cases of "regional colitis" reviewed by Neuman et al. (1954)—represent a mixture of different diseases. Lumb (1951) drew attention to the extreme difficulty in classifying this group, even after histological examination, and clinically they present a variety of symptom complexes ranging from chronic diarrhœa resembling that in ulcerative colitis but with normal sigmoidoscopic findings to obstruction from a hypertrophic stricture with thickened submucosa, histologically "Crohn's disease."

In the past twelve years 26 cases of such "atypical" colitis have been seen at the Central Middlesex Hospital, compared with 160 cases of typical ulcerative colitis. This group has been varied both in the clinical picture and in the anatomical lesions.

In this heterogeneous group were 8 cases which presented a more uniform picture, all coming under observation as abdominal emergencies with passage of blood per rectum, and with a short history of acute abdominal colicky pain suggesting obstruction. Operation and investigation showed the cause to be acute inflammation in a well-demarcated segment of the colon with normal bowel on either side. In no case was there any evidence of involvement of rectum or ileum, either at the time of the attack or subsequently, and in those cases where the colon was examined its appearance was locally indistinguishable from that found in ulcerative colitis.

Similar cases have been described by other workers. Brownlee (1951) reported 3 cases of "regional colitis" as an acute abdominal emergency.

ANALYSIS OF CASES

Case no.	Sex	Age (yr.)	Length of history	Site of lesion	Treatment	Follow-up
1	M	70	4 days	Descending colon from splenic flexure	Transverse colostomy	Died of uræmia postoperatively
2	F	59	3 weeks	Transverse and upper descending colon	Resection and anastomosis	Symptom-free two years later
3	F	55	48 hours	Terminal transverse and upper descending colon	Expectant	Readmitted 6 mos. later with carcinoma in sigmoid colon; no lesion in descending colon; well 2 yr. 3 mos. after admission.
4	F	66	12 hours (previous attack 1 year before)	Splenic flexure and upper descending colon	Expectant	No relapse in next 7 yr.
5	F	57	2 weeks	Transverse colon, especially distal half	Laparotomy	Died of heart-failure 2 yr. 3 mo ater, no evidence of recurrence
6	F	66	14 hours	Transverse colon	Laparotomy	Well 4 yr. later, no recurrence
7	F	50	5 days	Splenic flexure and descending colon	Laparotomy	Very well 5½ yr. later, no recurrence
8	F	42	36 hours	Sigmoid colon	Laparotomy	Died 6 yr. later of mammary carcinoma, no record of recurrence

Manning et al. (1955), reviewing 34 cases of "segmental colitis," mention that 5 presented as intestinal obstruction.

Branch and Sledge (1955) described 12 cases of partial or complete obstructive inflammation of the colon "simulating neoplasm," and in 4 of these cases there was gross bleeding.

Single cases have also been described by Grauwels and Jacobs (1955), Clinton-Thomas (1955), and Thompson (1950).

Fig. 2—Case 2: painting of macroscopic appearance of resected bowel.

On the other hand Neuman et al. (1954) reported that only 1 of 201 patients with "regional colitis" had symptoms of intestinal obstruction.

The main clinical features of the present series of 8 cases are summarised in the accompanying table.

Case-reports

Case 1.—A man, aged 70, was admitted on Aug. 2, 1955, with four days' history of severe colicky pain in the left lower abdomen. His bowels had not been open for one week, and he had passed only bright-red blood and flatus. He had not vomited, and he had lost weight. Carcinoma of the sigmoid colon was diagnosed.

On examination an irregular firm mass in the left side of the abdomen and tenderness in the same area were found. The rectum was empty.

Laparotomy (Aug. 2, 1955).—The descending colon from the splenic flexure to the iliac colon (about 9 inches) was thickened, œdematous, and acutely inflamed, with fibrinous exudate on the surface. Soft enlarged paracolon glands were palpable. The pelvic colon appeared clear but was distended, as was the transverse colon to a greater extent. Transverse colostomy was done which later prolapsed. The patient developed retention of urine and uræmia and died.

Necropsy Findings.—The descending colon, from the splenic flexure to the pelvic colon had a thickened and hardened wall. Most of the mucosa was ulcerated. The transverse colon, pelvic colon, and rectum showed no change. Microscopy of the colon showed only a little thickening of its wall, much less than in typical Crohn's disease, with mucosal ulceration and pseudopolyps typical of ulcerative colitis.

Case 2.—A woman, aged 59, was first seen in January, 1954, with three weeks' history of a severe onset of upper abdominal pain, accompanied by an intense desire to defæcate and a "bearing-down" pain. She could not open her bowels at first, but after about two hours she passed "liquid black slime and blood." This relieved the pain a little but not completely. Diarrhœa and vomiting continued for several days, the bowels being open about ten times daily,

Fig. 1—Case 2: barium enema showing localised narrowing of transverse colon and splenic flexure.

Fig. 3—Case 4: barium enema on Jan. 18, 1949, showing stenosed segment of descending colon.

Fig. 4—Case 4: barium enema on Sept. 19, 1949, showing decrease in length of narrowed segment.

and to a lesser extent for a further week or so. Bright-red blood was seen in the stools at the onset but not after that. She has lost about one stone in weight.

On admission her bowels settled down to normal. A barium enema showed irregular narrowing of the upper part of the descending colon and the whole of the transverse colon, with an irregular and rather woolly outline of the bowel (fig. 1). The remainder of the bowel was normal. Sigmoidoscopy was normal.

Operation.—The diseased portion of the bowel was resected and an end-to-end anastomosis was made. The resected bowel showed the typical changes of ulcerative colitis macroscopically (fig. 2) and microscopically.

Postoperatively the patient made a good recovery. She was seen in January, 1956, when she was quite well.

Case 3.—A woman, aged 55, was admitted on Oct. 4, 1952, with two days' history of severe abdominal pain She had passed liquid motions stained with blood.

On examination her abdomen was distended. Rectal examination showed no abnormality, and sigmoidoscopy to 25 cm. was also normal.

A barium enema on Oct. 23, 1952, showed that the distal few inches of the transverse colon and the upper part of the descending colon were contracted and slightly shaggy in outline. Similar but slighter changes were present in the sigmoid colon. The appearances were those of regional colitis.

Readmission.—On March 21, 1953, the patient was readmitted with acute obstruction.

Laparotomy showed a ring carcinoma in the middle portion of the *pelvic* colon, with some enlarged glands. A transverse colostomy was done, followed later by resection.

A barium enema on April 28, 1953, flowed freely round from the rectum to the distal opening of the colostomy. There was still a rather smooth contraction of the upper part of the descending colon. No abnormality was found at the site of the rectosigmoid anastomosis.

A barium enema on Jan. 8, 1955, flowed normally round to the cæcum. The site of the resection in the sigmoid colon was identified and appeared to be normal. Nothing abnormal elsewhere was found.

Follow-up.—The patients remained quite well in 1956 and has had no further symptoms.

Case 4.—A woman, aged 66, was admitted on Jan. 5, 1949, with acute abdominal pain since the previous night, with passage of blood per rectum. She had had a similar attack a year previously.

On examination she was passing bright-red blood per rectum. No other abnormality was found except tenderness in the left iliac fossa. An attempt at sigmoidoscopy failed.

A barium enema on Jan. 18, 1949, showed an area of narrowing about 4 inches long involving the descending colon and the splenic flexure (fig. 3). The remainder of the large bowel filled normally. Air inflation showed the stenosed portion to be incapable of distension.

A barium enema on Sept. 19, 1949, showed shortening of the narrowed segment (fig. 4). The patient recovered spontaneously.

Follow-up.—On Jan. 19, 1956, the patient wrote that she was well and had had no recurrence.

Case 5.—A woman, aged 57, was admitted on April 25, 1942, with two weeks' history of intermittent pain down the right side of her abdomen. The night before admission this became very severe on the left side and across her back. She had passed two or three black motions which, she said, contained blood.

On examination she had an obese abdomen, tender in both iliac fossæ. Per rectum nothing abnormal was found. Sigmoidoscopy showed normal appearances, fresh blood coming from above 20 cm.

Laparotomy (April 25, 1942).—The transverse colon was found to be considerably thickened, with recent omental adhesions in the distal half. The pelvic colon and rectum were normal. The patient made an uneventful recovery.

Follow-up.—On Feb. 15, 1944, she was readmitted with heart-failure and was discharged on March 11, 1944. On Oct. 1, 1945, she died in another hospital.

Case 6.—A woman, aged 66, was admitted on Oct. 20, 1952, with fourteen hours' history of severe colicky lower abdominal pain. Five hours after the onset she started passing blood and mucus per rectum. Sigmoidoscopy showed watery blood with mucus up to 20 cm.

Laparotomy.—The transverse colon was thickened œdematous and hyperæmic. The cæcum, ascending colon, small intestine, stomach, and duodenum were normal. Colitis involving the transverse colon was diagnosed.

A barium enema on Nov. 28, 1952, showed no abnormality.

Follow-up.—She has not been seen since her discharge, but she wrote in 1956 that she was well and had had no recurrence.

Case 7.—A woman, aged 50, was admitted on July 17, 1949, with five days' history of colicky abdominal pain. She had been passing blood and mucus per rectum for the first two days. She vomited at the outset, and her bowels had been loose but had not been open for four days before admission, although on two of these days she had passed blood and mucus.

On examination there was generalised abdominal tenderness. On rectal examination a soft mass was felt and darkish-red blood was seen. Carcinoma of the rectum was diagnosed, but on sigmoidoscopy no neoplasm was detected up to the rectosigmoid junction.

Laparotomy (July 17, 1949).—There was no free fluid. The cæcum, ascending colon, and transverse colon were distended. The splenic flexure and descending colon were small but not collapsed. The pelvic colon was slightly distended, with hard glands in the pelvic mesocolon and a firm polypoid mass in the mesocolon. The rectum and rectosigmoid junction were normal. No cause of obstruction was found.

Follow-up.—The patient wrote in January, 1956, that she had remained well.

Case 8.—A woman, aged 42, was admitted on Oct. 24, 1941, with thirty-six hours' history of griping abdominal pain, which had started suddenly. There had been no vomiting, but she had had considerable nausea. Her bowels had been open once after the onset of the pain and after a vegetable laxative had been taken. Defæcation increased the pain.

On examination her hypogastrium was tender, especially on the right side, and on rectal examination she was tender in the pouch of Douglas. Acute appendicitis was diagnosed.

Laparotomy showed a considerable amount of pus in the pelvis, and a hard rubbery mass about 2 inches long was present in the sigmoid colon, which at this point was covered by purulent exudate. Subacute regional colitis was diagnosed, and apart from appendectomy and drainage nothing further was done.

Follow-up.—The patient made an uneventful recovery but died six years later of carcinoma of the breast. There was no evidence of any recurrence of the bowel symptoms.

Discussion

These cases have a close clinical resemblance to one another, but that does not imply that they necessarily have a common ætiology. Histological examination was only possible in 2 cases, and in these the appearances, both macroscopic and microscopic, resembled more closely those of ulcerative colitis than those of regional ileitis. This is in accord with the findings in other published cases. The histological picture is, however, non-specific.

Case 7 did not show the same unequivocal evidence of localised inflammation as did the other cases, and the operative findings are confusing. However, the history of colicky abdominal pain, constipation, and rectal bleeding, and the operative findings of distended cæcum, ascending colon, and transverse colon behind a small splenic flexure and descending colon suggest that inflammation in this segment was causing obstruction. The long subsequent history rules out an undetected neoplasm.

In case 3 it is clearly possible that the initial attack and X-ray findings may have been related in some way to the carcinoma. Perhaps the blood in the first attack came from the undetected carcinoma, and the narrow segment in the region of the splenic flexure was due to reflex spasm; it is certainly probable that the similar changes in the sigmoid colon were due to the carcinoma. However, it seems unlikely that reflex spasm was responsible because the appearances began to improve spontaneously before the carcinoma was resected and still persisted afterwards.

Two points seem of particular interest in these cases: the site of the lesion, and the prognosis. In 7 of the 8

cases the inflammation was near the splenic flexure, as it was also in all 3 cases described by Brownlee (1951) and in those described by Grauwels and Jacobs (1955) and Clinton-Thomas (1955). Perhaps this part of the colon is more susceptible to this disease, or perhaps such lesions in this region produce a more dramatic clinical picture by causing obstruction earlier than do similar lesions elsewhere in the colon.

It is obviously difficult to assess the prognosis of this condition on the evidence of only a few cases, but the outlook appears better than for patients with typical ulcerative colitis, of whom 24% may expect to be readmitted in the next year and 50% in the next three years. The patients reported by Clinton-Thomas (1955) and Thompson (1950) remained well for four and five years respectively.

Brownlee (1951) has fully discussed what should be done if this condition is found on laparotomy. Clearly this must depend largely on such factors as the completeness of the obstruction, the complication of perforation, &c., but the relatively good prognosis of the cases described here suggests that a conservative approach may be adopted without risk.

Summary

8 cases of acute segmental inflammation of the colon are described. These all presented with a clinical picture of either acute or subacute intestinal obstruction, and usually of the passage of blood per rectum. Histologically the condition was indistinguishable from ulcerative colitis in the 2 cases examined.

These 8 cases are compared with other published cases showing similar lesions.

The splenic flexure may be a part of the colon more prone to this disease.

In contrast to typical ulcerative colitis and regional ileitis this condition does not seem likely to recur.

I am grateful to the surgical staff of the Central Middlesex Hospital for permission to publish details of these cases, and to Dr. Avery Jones for much helpful advice.

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ACROPARÆSTHESIÆ AND THE CARPAL-TUNNEL SYNDROME

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SINCE the original paper in 1947 by Russell Brain, Dickson Wright, and Wilkinson, few articles have appeared in this country on median-nerve compression in the carpal tunnel. Kremer et al. (1953) stated that this condition was the main cause of the syndrome long known as acroparæsthesiæ, which affects women in middle life, and is characterised by pain and paræsthesiæ in one or both hands, worse at night. Many neurologists now accept this view, but others still think that acroparæsthesia may be due to other causes, such as cervical spondylosis, or the axillary-inlet syndrome, or that it is an entity in itself. Elkington and Martin (1955) take the latter view, but list several differential diagnoses, including median and ulnar compression, and say that acroparæsthesia also affects the lower limbs. Walshe (1955) adheres to his original view that it is due to stretching of the lower components of the brachial plexus over the first rib. "The carpal tunnel syndrome," he writes, "is one of the rarer causes of acroparæsthesia, and operation on the nerve is by no means always successful." Such a lag in opinion followed the introduction of the mechanical explanation of sciatica two decades ago, and sciatic neuritis died as slow a death as the axillary-inlet syndrome is now doing.

In view of these conflicting opinions, consideration of 80 unselected cases of acroparæsthesia which I saw in 1954–56 at one hospital (forming about two-thirds of such cases referred to the neurological department) may be helpful in clarifying ideas on the subject. In 1954, I began to test for the carpal-tunnel syndrome by splinting the wrist-joint in cases where the diagnosis was in doubt. The series illustrates the value of such splinting, both in diagnosis and treatment.

In contrast, during the three-year period, there were only 3 cases of cervical rib and 1 of the "axillary-inlet syndrome"—the latter in a market porter. These cases are mentioned only to show the relative incidence of the conditions.

The Patients

Of the 80 patients, 13 were men and 67 women. The youngest was aged 21 and the oldest 83, but most were between 30 and 60; 6 were in their twenties, 20 in their thirties, 19 in their forties, 20 in their fifties, 10 in their sixties, and 5 over 70. The age-incidence in men seemed somewhat higher than in the group as a whole. The older patients often had arthritis of the wrist.

The duration of symptoms varied greatly, from two weeks to twenty years. 15 had had symptoms for less than a month, 17 for one to three months, 11 for four to six months, 9 for seven to twelve months, 15 for one to five years, and 13 for more than five years. Most patients with long histories had signs of severe median-nerve damage; but a few with a long history had no abnormal signs, while in others median-nerve signs developed within a few weeks.

The condition was bilateral in 27 patients, the right side being worse in 20 and the left in 7. In 41 patients the right hand only was affected, and in 7 the left only. Altogether in 60 patients the symptoms were predominantly right-sided. When the left side was solely or predominantly affected, there was no definite association with left-handedness.

34 patients had symptoms only at night, and 22 patients only during the day. In 17 the symptoms were worse by night than by day, and in 7 worse by day than by night. When symptoms were present in the waking hours, they were most troublesome in the first hour after rising when the hand and fingers felt numb and the patient found it difficult to do up buttons. The symptoms were mainly described as painful pins-and-needles or a burning tingling. In some, relief was obtained by hanging the arm down outside the bed-clothes, but many had to get out of bed and pace the room. In patients with bilateral symptoms it was very unusual for both limbs to be affected simultaneously, though both limbs might be affected in the same night.

Many patients could localise their symptoms to the fingers supplied by the median nerve, but about a third of them thought either that the little finger was also involved or that the whole hand was affected.

In most, the symptoms were maximal distally, but the pain commonly spread up the arm and in several affected the limb as high as the shoulder.

During the day most patients had the symptoms intermittently when using the hand, but also when keeping it still for a period, especially when holding it up to read a newspaper. Others noticed that carrying heavy baskets made the symptoms worse, but the commonest aggravating causes were knitting and sewing. The

nocturnal symptoms were often worst after a heavy day, commonly after washing on Monday.

The constant numbness associated with sensory loss was also troublesome, making it difficult to hold a needle and manipulate other small objects; it affected mainly the thumb and index fingers.

By contrast, motor symptoms were less frequent; the weakness caused by a median lesion can be largely compensated for and disability is slight. Several patients complained of hollowing of the thenar muscles, without having noticed that the thumb was weak. In a few this wasting antedated the dysæsthesiæ.

In 5 patients the symptoms suggested a progressive median paralysis, motor and sensory, without burning paræsthesiæ. In those with a long history, symptoms were often intermittent, with periods of freedom for months at a time between bouts of symptoms. Symptoms often ceased with a holiday or a period of rest in bed at home or in hospital, with or without an operation on the neck, and returned with a period of extra work or in cold weather. It seems clear that the condition is often self-limited. A change of occupation did not always relieve the symptoms.

Physical Signs

In a third of the patients, there were no abnormal physical signs when they were first seen, though in a fifth of these slight sensory impairment developed later at the tip of one or more median-supplied fingers, and in 1 slight weakness of the opponens pollicis appeared. Of the patients with no abnormal neurological signs, 2 had tenderness on pressure in the thenar eminence.

The commonest physical signs were abnormalities of sensation, but 5 patients had only motor signs—weakness of the opponens pollicis or abductor brevis; in 1 of these sensory changes developed later. Abnormalities of sensation were slight in many patients and might easily have been missed or attributed to thick skin on the tip of the thumb and index finger. In others the sensory impairment was clearly of median-nerve distribution, affecting the radial side of the ring finger as well as the other three digits, but in an equal number only one or two fingers were affected. 2 patients also had weakness of flexion of the terminal joint of the index finger, a finding described in the original paper by Brain et al., and presumably due to ischæmia of the tendon. This latter is also the likely cause of the stiffness of the fingers so commonly experienced by these patients on waking.

The tourniquet test (Gilliatt and Wilson 1953) was done in 45 patients and was positive in 24, negative in 20, and doubtful in 1. Of the 25 cases without signs, it was positive in only 8, and in view of this it does not seem to be a valuable test in diagnosis.

The thenar eminence was tender in 5 cases, and in 1 Tinel's sign was positive. Coldness and cyanosis of the fingers were noted in several patients, and a few had symptoms suggestive of Raynaud's phenomenon; in others the hands were noted to be abnormally red. 1 patient with Raynaud's syndrome said that her symptoms had been relieved by the operation of median-nerve decompression.

Radiographs of the wrists were rarely of value unless there was clinical evidence of arthritis. In several cases, osteo-arthritic changes and old fractures in the region predisposed to the condition. Radiographs of the cervical spine showed the usual proportion of irrelevant changes, increasing with age.

Ætiological Factors

Of the 67 women, 49 did part-time work in addition to their housework. 14 were clerical workers, 16 were in tailoring trades, and 6 were office cleaners. In 3 a change of occupation immediately preceded the onset of symptoms, in another symptoms followed the purchase of an autocycle, and in 2 patients the symptoms followed an operation. The men had various occupations.

8 of the women were pregnant when seen; in another 2, in whom the onset was immediately after delivery, the course of the disease was transient with spontaneous remission in a few weeks. Although symptoms usually clear up after delivery, in 2 patients they persisted for some years.

7 patients had arthritis of the wrist; in 1 this was associated with an old fracture, and another had had a septic arthritis. A further case was associated with a ganglion at the wrist. Kellgren and Moore's (1952) "primary generalised osteo-arthritis" appeared to be a factor in 6, with arthritic changes in the cervical spine, Heberden's nodes, and arthritis elsewhere. The presence of osteo-arthritis in the hands and wrist does not mean that operation will not bring relief. If cervical osteo-arthritis had been a factor, evidence of radicular changes and cervical pain and rigidity would have been expected; but these were not found. The rapid and complete relief of symptoms by splinting the wrist also demonstrates the irrelevance of radiological changes in the neck.

1 patient had an unrelated cervical rib. There were no familial cases in this series, though they undoubtedly occur.

There were 3 diabetic patients in this series, and I have seen several others, usually elderly. In my view the lesion is not a diabetic neuropathy but is associated with obesity and osteo-arthritis of the wrist.

Treatment

Of the 80 patients, 51 were treated initially by splinting the wrist-joint, 15 were referred for median decompression, and 14 treated conservatively by other means.

In the splinted group, the treatment was unsuccessful in 2, and in another only partial relief was obtained. Of the other 48, 6 relapsed later and were referred for operation, and 5 were referred to the surgeon when free from symptoms. 3 patients, though not quite symptom-free, declined operation. The other 34 patients were discharged symptom-free and have had no recurrence of symptoms over periods varying from six to thirty months.

It was found that wrist-splints were best in the neutral position. One patient's symptoms were aggravated by a splint in extension and another's by a splint in hyperflexion, but both these patients obtained relief from their symptoms with a straight splint.

The patients with nocturnal symptoms and no physical signs were the most satisfactory to treat. The splint was then worn only during the night, and afforded complete relief of symptoms. In many of these patients, hypnotic drugs had been prescribed but did not prevent them from waking during the night. 1 patient had discovered for herself that her symptoms were relieved by wearing a glove in bed. In those with bilateral symptoms, two splints were worn, but in most patients symptoms were more severe on one side, and a single splint sufficed to prevent them waking up. Several still woke with numb fingers in the morning after an uninterrupted night, and in a few slight sensory impairment developed in the fingers though relief of symptoms was apparent, but later these features cleared up. 1 patient was treated by splinting when the condition relapsed and was again relieved, but all the other 6 who relapsed were referred for operation. The pregnant patients formed a satisfactory group for splinting, with the expectation, justified by the event, that the symptoms would clear up after delivery.

No effort was made to persuade patients to wear the splints if they disliked this method of treatment, and the operation of median-nerve decompression was spoken of as lightly as possible. The patients were told they would stay in hospital for only two nights, and that no disability or complications would arise from the operation

as such. Few patients found that wearing a plaster splint in bed was uncomfortable or complained about it, and many for whom operation was advised preferred to continue with splinting.

Relief of symptoms with splinting was very often immediate—from the first night of wearing the splint. This immediate response could be obtained in patients who had previously wakened every night for months, or, in 1 case, for more than two years. In some a period of several nights—up to a week or more—was needed before the symptoms no longer prevented sleep. The patients were seen after two or three weeks, and if no relief was obtained at the end of this interval the treatment was regarded as unsuccessful.

In general, patients with gross median-nerve signs were regarded as unsatisfactory for splint treatment, especially those who had had their symptoms for a long period. By contrast, in 1 early case with motor and sensory signs, symptoms and signs cleared up completely when a plaster splint was worn continuously for three weeks, and a patient with subacute rheumatism, with arthritis of the wrist-joint and median sensory loss, made an excellent recovery. A woman with cardiac failure and advanced median-nerve paralysis with acroparæsthesia was considered unsuitable for operation and made a good symptomatic recovery with splinting. Another patient with objective signs was a poorly controlled diabetic and she too made an excellent recovery with splinting alone.

Patients with both diurnal and nocturnal symptoms were told to wear the splints as much as possible by day, but to take the splints off when the hands were in water; this régime usually proved satisfactory. The patients were advised to wear the splints for at least six weeks, and to wear the splints again if the symptoms reappeared; but few needed to wear them longer than three months.

26 patients were referred for operation; 15 of these were sent to the surgeon after their first visit, 6 had relapsed after splinting, and 5 were symptom-free. In 22 the results were excellent, with complete symptomatic relief, and abnormal physical signs disappeared in all but 2. Re-exploration was needed in 1 case after symptoms had returned on one side. In only 2 patients were the results unsatisfactory, 1 patient being no better and the other only partly relieved. 2 patients are still waiting for operation.

Symptomatic relief from operation is very satisfactory, but there is also a surprising degree of sensory and motor recovery if the patients are followed for long periods. In patients seen two years after operation, sensation had usually completely recovered and motor signs largely gone. Symptomatic relief from numbness was often delayed for several months, though pain was relieved at once. Results of operation are so good that, in my view, in case of failure the wrist should be re-explored, for sometimes the distal part of the transverse carpal ligaments in the palm has not been divided.

One of the most striking cases was a lady of 83 with a twenty-six-year history of atrophy of the right thenar muscles, and twenty years' pain in the right hand. In view of her age, the presence of gross median-nerve signs, bony ankylosis of the wrist, hypertension, and history of a radical mastectomy, I advised against operation. Eighteen months later left-sided median-nerve signs developed, and the left median nerve was decompressed. The result was so successful that she asked for the right side to be done. Although the nerve was attenuated to a narrow thread, there was good symptomatic relief on this side.

In the conservatively treated group there were 2 that had median-nerve signs but were considered too advanced for surgery. 3 patients improved with the help of sedation and vitamin B and another improved after delivery. 8 patients were treated with shoulder exercises; 4 improved and were discharged, 1 was referred for median-nerve decompression, and 3 were later splinted; all these last 4 did well.

Splinting in Diagnosis

In only 2 of 51 patients did splinting fail to relieve the symptoms, though it was only partly successful in a 3rd. 11 other patients had gross median-nerve signs—evidence that 66 of these 80 patients had median-nerve compression in the carpal tunnel. Furthermore, 3 responded to splinting after shoulder-girdle exercises had been tried without effect, and another was operated on with relief of symptoms. The 2 unsuccessful splint cases were also operated on. In only 4 cases was the diagnosis of median-nerve compression in doubt. These were treated successfully with shoulder-girdle exercises, but as their symptoms were identical with those of the others it seems probable that they too had median-nerve lesions.

The immediate response to splinting is quite different from the slow improvement over some months with shoulder exercises. Splinting of the wrist-joint was tried in several cases of cervical-disc protrusion, and in 2 patients with organic disease of the central nervous system, but none admitted any relief of symptoms.

Causation of Symptoms

The diurnal symptoms are commonly related to movements of the wrist-joint, especially extension, but no satisfactory explanation for nocturnal acroparæsthesiæ has appeared, though it seems probable that two factors are present:

(1) Lying on the arm in sleep, causing ischæmic compression of the nerve, similar to that demonstrated in the tourniquet test. In favour of this view are the facts that many patients admitted to lying on the affected side, and that few were wakened with symptoms in both hands simultaneously.

(2) Œdema of the tissues, which is maximal during sleep, and may also be the explanation of the symptoms in pregnancy. It is probably greater after over-use of the wrist, for many patients found their symptoms worse after a heavy day.

In view of the fact that pressure in the carpal tunnel is greatest in extension, the splints have been mainly applied with the wrist straight (neutral position). The splints prevent repetitive movement by day and will prevent the symptoms at work. The relief of symptoms at night may partly be due to the splint preventing the patient from turning over on the affected side; even if she does, the nerve cannot be compressed by body pressure. It is also probable that the splint helps accumulated œdema to subside.

Differential Diagnosis

This syndrome is so common, and gross neurological disease so unusual a cause, that it is possible to be careless and miss such conditions as disseminated sclerosis and subacute combined degeneration of the spinal cord, which may both start with paræsthesiæ in the fingers.

I have recently seen a case of disseminated sclerosis with nocturnal symptoms; no signs were present outside the arms to help the diagnosis.

In another patient with subacute combined degeneration, reflex changes, calf tenderness, and impairment of deep sensation in the legs developed while she was awaiting admission for carpal decompression.

Apart from these central nervous disorders—and it should be mentioned that the carpal-tunnel syndrome may arise in patients with established chronic neurological disorders—the differential diagnosis is between other conditions causing pain and paræsthesiæ in the arm.

Cervical-disc Protrusion.—Here the onset of symptoms is usually abrupt, neck pain and stiffness are often prominent, and pain is largely proximal, rarely extending below the wrist. Reflex changes, muscular weakness, and sensory loss of radicular distribution are usually present.

Cervical Spondylosis.—The symptoms are similar to those of cervical-disc protrusion but may affect several nerve-roots. On the whole, neck pain tends to be less severe. Radiological evidence of "cervical spondylosis" is not by itself an

indication that the symptoms are related to it, unless there is also pain and stiffness of the neck with radiation of pain from the cervical spine on twisting.

"*Tennis Elbow*" often gives rise to pain and paræsthesiæ in the forearm. The paræsthesiæ may be due to involvement of the superficial branch of the radial nerve in the inflammatory process, for radiation of symptoms is to the extensor surface of the forearm and to the dorsal surface of the fingers. There are no abnormal neurological signs, and the diagnosis is made by reproducing the symptoms on extension of the elbow with the forearm hyperpronated.

Cervical Rib.—Kinnier Wilson (1913) first drew attention to wasting of the thenar muscles in cervical rib, but it is unusual in this condition for sensory loss to be of median-nerve distribution. Pain usually starts in the shoulder and runs along the inner aspect of the arm and forearm, but a third of the patients with cervical rib with neurological signs have no pain. Nocturnal paræsthesiæ are rare in the cervical-rib syndrome. Both conditions may coexist—in a patient of 70 median sensory loss developed ten years after a cervical-rib operation, and was cured by wearing a wrist-splint.

One cannot dogmatically state that the "axillary-inlet," "thoracic-outlet," and "scalenus-anticus" syndromes have no existence apart from cervical rib, but they are clearly much rarer than had been previously thought. The cases of costo-clavicular compression described by Falconer and Weddell (1943) in soldiers carrying heavy packs, have their counterparts in civilian life, as in the market porter mentioned above, and a woman who developed tingling in the 4th and 5th fingers after a malunited fracture of the clavicle, but no distinct syndrome emerges apart from these obvious cases. Unless these are two identical syndromes, it seems probable that nearly all cases of the formerly diagnosed axillary-inlet syndrome are really due to median-nerve compression in the carpal tunnel. The presence of symptoms in the little finger does not—as has been suggested—prove that the diagnosis of median-nerve compression is incorrect, for no objective sensory impairment can be found, and such cases respond equally well to median decompression. Several patients who have had operations on the neck have returned with typical median-nerve signs, and been cured by operation at the wrist; the apparent initial success of some of these neck operations is probably explained by the period of rest away from the causative factor.

Pulling on the arm may reproduce the paræsthesiæ, and this has been given as evidence for the axillary hypothesis; but in many normal patients the radial pulse can be obliterated by such a manœuvre and the tourniquet test for median-nerve ischæmia thereby reproduced.

Summary

A group of 80 cases of acroparæsthesiæ is analysed. A third had no physical signs. The rest had evidence of partial or complete median-nerve lesions. A few had a progressive median-nerve paralysis without nocturnal paræsthesiæ.

Occupation, pregnancy, diabetes, and osteo-arthritis of the carpus are of particular importance in ætiology.

The tourniquet test was not found to be helpful in doubtful cases.

54 were treated by splinting, and in all but 3 the symptoms were immediately relieved. 34 were discharged without operation. Results of operation were good, even in the presence of arthritis of the wrist. Splinting was particularly helpful in pregnancy, where the symptoms arise as a result of acute swelling in or around the wrist-joint; and in cases where surgery was declined or thought to be contra-indicated.

The series strongly supports Kremer's view that the cause of acroparæsthesia is median-nerve compression. The differential diagnosis is discussed, and neither the axillary-inlet syndrome nor cervical spondylosis is thought to play any part in the ætiology.

I am grateful to the surgeons of St. Bartholomew's Hospital for access to case-notes after operation, and especially to Mr. E. Tuckwell, who operated on the majority. I also wish to thank Dr. J. W. Aldren Turner for his helpful criticism.

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LONG-TERM CONTROL OF SEVERE BRONCHIAL ASTHMA WITH ORAL CORTISONE

SECOND REPORT

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SINCE our first reports (Savidge and Brockbank 1954a and b), treatment has been continued and more patients have been brought into the trial (table I). We have continued to make our assessments in the following grades:

TABLE I—THE MATERIAL (13 MEN, 16 WOMEN)

—	Minimum	Maximum	Average
Age (yr.)	16	70	40
Duration of asthma (yr.)	2½	36	16½
Duration of treatment (yr.)	9/12	> 4½	2
Average daily dose of cortisone (mg.)	37·5	150	72

Grade I: Those whose improvement was sufficient to make a great difference to their ability to work and to enjoy life.

Grade II: those who had improved, but mostly subjectively, and were able to do a little more than previously.

Grade III: those who were not significantly improved.

In table II the results are contrasted with those in our previous paper. There is a definite deterioration, of the figures, and even these are not as good as they appear.

Our results agree in some measure with those produced by the national Medical Research Council trial (1956a), covering 96 patients, in which we took part. The general conclusion was that "the patients receiving cortisone were subjectively and objectively improved during the first 2 months of treatment to a greater extent than those receiving the placebo." "The early improvement with cortisone treatment was hardly sufficient to make a significant contribution to improved capacity for work, and cannot by any standard be regarded as dramatic

TABLE II—LONG-TERM CORTISONE TREATMENT OF CHRONIC ASTHMA: NO. OF CASES IN EACH GRADE

Assessment	Grade			
	I	II	III	Dead
Now	9 (*31%*)	3 (*10%*)	10 (*35%*)	7 (*24%*)
First (13 cases)	6 (*46%*)	4 (*30%*)	1 (*8%*)	2 (*15%*)

or as great as that shown in patients with status asthmaticus."

We are not absolutely in agreement with this conclusion. Almost a third of our patients are still much improved. Their number, as will be seen, can be reduced from 9 to 6, but on the other hand 3 of the patients who died were in the "much improved" category for periods up to twelve months before their death. 1 classed as no better had likewise been much better for a considerable period.

When our results are split into sexes there is a preponderance of females in the first grade (7 : 2) and of males in the deceased (5 : 2); the male : female ratio was 3 : 0 in grade II and 3 : 7 in grade III.

The Grade-I Patients (table III)

It is doubtful how far it is fair to include 3 of these cases.

Case 1 has dropped from 10 attacks of bronchospasm in twenty-four hours to 3 attacks. He gets about better, breathes more easily, and sleeps better. But he has gained

TABLE III—THE GRADE-I CASES

Case no.	Sex	Age (yr.)	Duration (yr.)
1	M	33	12
2	F	54	36
3	F	70	9
4	F	26	23
5	F	52	2½
6	F	56	6
7	M	16	9
8	F	17	14
9	F	52	13
	Average	42	16

48 lb. in weight and now weighs 15 st. This has of itself brought foot and knee troubles and necessitated a salt-free and low-calorie diet. He remains on prednisone 10 mg.—any curtailment causes bronchospasm.

Case 4 never had much cortisone. She was on treatment for four and a half months only, with an average dose of 37·5 mg. She was at the time four months pregnant.

Case 7 had had frequent bouts of asthma coinciding with quarrels between his parents. He had been on the blank material in the early trial without much benefit. He was changed to cortisone. He came back after a week saying he was "very well," eating better and sleeping better. He had never been like this before. But he added, "My mother has left home." It was a pity that this should happen on the day he started cortisone, and he is of the opinion that it was the real cause of his improvement; but from then on he was vastly better. He remained very well with occasional minor attacks for a year. At the end of that time we persuaded him to stop treatment. That was sixteen months ago. He has not been so well since but has not wanted to return to cortisone.

On the other hand a few of these patients have improved and remain much better than they were.

Case 2 had been in and out of hospital for two years and was bed-ridden with asthma most of the time at home. She could not do her own housework. She returned to work within two months of starting treatment and undertook the nursing of her uncle who had dropsy. She was also able to fetch the coke. This meant pushing ½ cwt. of coke for three-quarters of a mile in a box fitted on four wheels, one of which was missing. Progress has been maintained with occasional ups and downs. One of her last remarks was "I'm O.K. No trouble. Working long hours."

Case 5 had spent three years in bed or in a chair at home or in hospital. She could never go away for a holiday. If she did so she almost invariably came home in severe status asthmaticus within forty-eight hours. For three and a half years she has been able to go out and do her own shopping, housework, and cooking. She has had several holidays without trouble. She has occasional setbacks and has gained a lot of weight, but is not yet as heavy as when the asthma began. Last autumn she said "I'm far far better than I used to be. I've just had a marvellous holiday. I'm enjoying life."

Case 8 is our most successful case. There is no doubt whatever that cortisone has made a new woman of her. From being a chronic asthmatic, unfit to work, she improved so much that she returned to work and got married and had a healthy baby, while continuing to take cortisone. Her maintenance dose is 50 mg. Whenever we have attempted to cut it down spasm has returned. She gets occasional attacks of asthma—but nothing like the ones she used to have so frequently.

It is worth noting that in the M.R.C. trial 1 patient was withdrawn by an obstetrician because it was felt that pregnancy and cortisone were incompatible. This view is widely held.

Case 9 did well from the start, but after six months a little œdema developed and it was necessary to cut down the dose. The result was a relapse. But we got control again and have kept her on a maintenance dose of 62·5 mg. with very little trouble, whereas she had been a chronic invalid before the treatment started.

It is difficult to draw hard conclusions from these 9 cases, but two things can be said. All of them improved from the start of the treatment. There seems to be improvement particularly in middle-aged or elderly women in whom asthma developed late in life.

Deaths and Side-effects

The 7 deceased patients (table IV) all died suddenly, and not always in an asthmatic spasm. Possibly the adrenal glands had been affected by the cortisone. We know they were atrophied to some extent in 2 of the patients.

Case 10 did very well for a year but then began to lose ground. She was in hospital in status asthmaticus four times in the next year. Eventually, while in hospital, she had another spasm and died within five minutes in spite of antispasmodics. The attack did not seem to be worse than the others, but she suddenly went blue with peripheral circulatory collapse. Necropsy revealed mucus plugging in the larger bronchi and generalised venous congestion. The adrenals together weighed 9 g.; there was some atrophy of the cortex.

Case 11 attended the clinic for many years without the slightest benefit. Cortisone seemed to be of no help, but once we had begun he would not let us discontinue it. All we know about his death is that he died suddenly at home.

Case 12 is another patient who did well for many months. After eight months she said she was *much* better: "I couldn't walk across the room before I started the treatment. I sleep better. I have fewer attacks. I can cook. I do most of my housework." Gradually the spasm recurred, and a year later she was in hospital in status asthmaticus. We broke the spasm and sent her home. "She was better for three weeks," wrote her husband. "This gave us hope for something better but she woke up one morning in one of the severest attacks I have ever seen. She recovered gradually. Four days later she had a similar sudden attack and died."

Case 13 also did very well for many months. Before treatment, he had been almost tied to the house with asthma. For eighteen months he had spent his life in a chair downstairs. He recovered sufficiently to be able to take up some of the previous extensive social activities. He too began to have increased spasm including several bad attacks of status. The final one started at 6.15 P.M. and did not yield to intravenous aminophyllin until midnight. At 3 A.M. he was asleep and breathing easier. A few minutes later he was found dead by the night nurse. Necropsy showed the usual lung changes with mucous plugs and terminal acute bronchopneumonia.

TABLE IV—DECEASED PATIENTS

Case no.	Sex	Age (yr.)	Duration of asthma (yr.)	Duration of treatment (mos.)	Terminal dose (mg. per day)
10	F	51	20	20	50
11	M	54	30	20	50
12	F	44	7	20	75
13	M	50	4	29	75
14	M	37	25	3	87·5
15	M	45	20	5	87·5
16	M	17	13	31	150

The adrenals were below average size (2·6 and 3·2 g.). On section the cortex was extremely narrow and less yellow than normal.

Case 14 had had almost continuous asthma for three years, with frequent admission to hospitals. At first he did well on cortisone but relapsed and was brought back to hospital in status. We delayed treatment with larger doses, and he died suddenly while not in spasm. Necropsy showed that death was probably due to asphyxia caused by bronchial obstruction with plugs of tenacious mucus. There was no evidence of infection of the lung or of right heart failure. The adrenal glands were rather below the average in size (Savidge and Brockbank 1954b).

Case 15 had had chronic asthma for twenty years with several attacks of status. He improved for a time, but we tried to hold him on too small a dose. We increased it to 75 mg. daily, but once more he passed into status and died in the ambulance that was bringing him back to hospital. Unfortunately there was no necropsy (Savidge and Brockbank 1954b).

Case 16 could be controlled only with large doses, his maintenance-dose being 150 mg. He kept fairly well at work but had bad breakdowns once or twice a year. On the evening before he died, he had been in comparatively good health. He went to bed and shortly after midnight shouted that a bad attack was coming on. He died before any treatment could be given.

This question of damage to the adrenals is very important. It may well be responsible for some of these deaths. In addition there may be disturbing side-effects when cortisone has been withdrawn, causing some patients to have a stress reaction (Salassa et al. 1953, Taub et al. 1956, Allanby 1957, Slaney and Brooke 1957, Slocumb et al. 1957). We have not experienced this, but evidence is beginning to appear of sudden death in such patients involved in an accident or subjected to an operation under anæsthesia or in whom an acute infection ensued with a shock-like syndrome.

Effect on Weight

This has been a real trouble in some of our cases, and has often meant that the dose of cortisone has had to be kept lower than would otherwise have been the case. There was no change in 7 patients, and gains of 5–14 lb. in 7, of 15–28 lb. in 8, of 29–42 lb. in 3, and of 43–50 lb. in 4; the change in weight ranged from −4 to + 50 lb., with an average gain of 17 lb.

Case 1 has already been mentioned. Even though he has been changed to prednisone, he still has to keep on a salt-free diet. He has gained 48 lb. and is very much overweight.

Case 5—one of the most successful cases—has gained most weight (50 lb.) and she now weighs 15 st. 7 lb. Before her asthma started she weighed 16 st. 11 lb., but she lost 5 st. before starting cortisone—partly by dieting, partly through her asthma.

Effect on Blood-pressure

This has never been a worry to us. We have regarded as abnormal an increase of 20 mm. Hg in the systolic or diastolic figure, if it brought either outside the range 140/90 (table v). There was a serious increase in only 1 patient, and she was one of our most successful cases (case 2).

Remissions

12 patients had eighteen remissions lasting from four days to three and a half years. 8 patients had unbroken remissions lasting six, seven and a half, nine, twelve, fifteen, sixteen, forty-two, and forty-two months.

TABLE V—EFFECT ON BLOOD-PRESSURE (NO CHANGE IN 25 PATIENTS)

Sex	Age	Duration of treatment (yr.)	Rise of blood-pressure (mm. Hg)
M	40	1½	120/80 to 150/100
M	53	> 3	170/100 to 190/100
F	54	> 3	165/95 to 210/120
F	52	> 4½	120/80 to 175/95

TABLE VI—PATIENTS STILL ON CORTISONE

Case no.	Sex	Age (yr.)	Duration of treatment (yr.)	Grade
1	M	33	3	I
2	F	54	3	I
3	F	70	4	I
8	F	17	4½	I
9	F	52	4½	I
18	M	22	3¼	II
20	M	53	3	III
21	F	49	2	III
22	F	18	3½	III

Case 4 ceased treatment when she was four months pregnant in August, 1953. Her first baby arrived in January, 1954, and her second in September, 1955. When we saw her last, six months ago, she had a cough and wheezed occasionally, but not enough to make her want any treatment.

Case 17 had an equally long remission. He improved on cortisone, and after nine months the blank material was substituted without his knowledge. That was more than three years ago, and he still does not know of the change. He has very little asthma and is loud in his praise of the benefits of cortisone. He comes regularly to the clinic for the supply of inert tablets to be renewed.

Case 8 had a remission of four days when we changed her over from cortisone to the blank material. She knew nothing of the change. On the fourth day she went into status asthamticus, and we have never dared to repeat the experiment.

Case 18 has had two remissions. The first was of nine months, when we switched to the blank preparation without his knowledge; his spasm gradually returned. The second was of a fortnight, when he ceased treatment of his own accord.

Case 19 has had four periods off treatment, all of his own accord. The first three lasted two, five, and fourteen weeks. Each time he was forced to return to cortisone. He is now in Canada, and, when we last heard from him, had been in remission and off treatment for six months.

Antibiotics

Antibiotics have often been used with advantage in addition to the cortisone, where pneumonitis or purulent bronchitis were present.

Difficulty of Getting Patients off Cortisone

There is no doubt that cortisone is a habit-forming drug so far as asthma is concerned (table VI). Patients who have done well react badly to any attempt at withdrawal, as do some in whom the cortisone appears to have brought no improvement.

Case 20 has been more or less bedfast for the past two years, and has had repeated febrile attacks necessitating antibiotics. He insists that he is worse whenever we try to curtail his maintenance dose of 75 mg., so we are forced to continue. Larger doses do not improve his symptoms.

We have not yet had any trouble with osteoporosis, though it has been shown to be present. 1 patient broke her arm in a minor fall; but she had no osteoporosis, and, after consultation with the radiologist and orthopædic surgeon, we decided that it was just a normal accident.

The Short-term Course

If the long-term treatment of chronic asthma has been disappointing, there is a very different story to tell about the short-term course for status asthmaticus. We have no blind trial figures of our own; but those published after the Medical Research Council's trial (1956b) are interesting.

All the patients were first treated for twenty-four hours with antispasmodics, and only those who were still in status asthmaticus were admitted to the trial. 32 patients in twelve hospitals were admitted to the trial, of whom 15 were in the cortisone group and 17 in the control group.

The patients in the cortisone group were without doubt more effectively treated than the others. By the fourth day, 10 of the 15 patients treated with cortisone no longer had disabling bronchial obstruction, whereas only 4 of 17 in the control group were as well as this. At the end of the fourteen-day period 11 of 15 in the cortisone group, but only 4 of 17 in the control group, were free from bronchial obstruction.

Observation for three months after the trial showed that patients in both groups reverted to their usual asthmatic condition; and attacks of status asthmaticus recurred in 9 out of 11 patients in the cortisone group and in 7 out of 14 in the control group.

There can be no doubt whatever about the value of the short-term cortisone course, not only in cases of status but in severe cases that give a history of clear periods—namely, patients who might be expected to have a clear run if the spasm can be broken.

The course saves hospital beds. It can easily be used by the general practitioner, for there are no injections to be given and (so far as we know) no complications. The great advantage is that it has a beginning and a definite end in the patient's mind (table VII). Only in very

TABLE VII—THE SHORT-TERM COURSE OF CORTISONE

Day	No. of cortisone acetate tablets (25 mg. each)				
	Each day	Each dose			
1	12	3	3	3	3
2	11	3	2	3	3
3	10	3	2	2	3
4	9	3	3	3	
5	8	3	2	3	
6	7	3	2	2	
10	3	1	1	1	
11	2	1	0	1	
12	1	1	0	0	
13	0				

exceptional circumstances should the course be allowed to continue after the twelfth day. Many of the patients will relapse sooner or later; there is no reason why the course should not then be repeated. Far less damage is likely to be done than would be if cortisone were given continuously. 3 case-notes out of 40 show the effect of the treatment.

Case A, a man aged 54, was seen at his home. When he had been in status asthmaticus for twenty-four hours in spite of antispasmodics, he had been given morphine, and when seen was in deep coma with neck veins dilated, and his pulse barely perceptible. So stiff was his neck that the possibility of a subarachnoid hæmorrhage was considered. He was too ill to move. Next morning the stiffness had gone. He was conscious but still in status. A short-term course was begun, and the spasm ceased within thirty-six hours. That was nine months ago. He has had a little spasm since, but none since we agreed to his suggestion of a daily dose of cortisone. He is fully controlled by cortisone acetate 5 mg.—surely a psychological effect.

Case B is particularly interesting. She was sent by ambulance as a chair-fast case of chronic asthma of essentially nervous origin, with the request that we should bring her into a trial. Her doctor felt that her symptoms might improve if she thought she was being useful in an investigation. She was so obviously intensely neurotic that it would have been unjustifiable and meaningless to bring her into a blind trial. She was told she would be brought into a cortisone trial and was given the blank tablets, but they brought no relief. She remained so distressed after two months and was running up such a bill for ambulances that we decided to try the short-term course hoping that it might help the 5% organic lesion that we thought was keeping the hysteria at full stretch.

The course started in the middle of April, 1956. A fortnight later the patient walked to the clinic with a letter from her doctor in the following terms:

"The result has been astounding if it is only temporary. For ten days there has not been a rhonchus. I cannot remember when I was last able to hear her heart. The patient's gratitude to you is quite unbounded and matches my own. She desires that you should see her as she really is and not only as the poor wheezy creature you know so well.

"I must confess that my belief in the psychological ætiology of asthma has been badly shaken. The complete clearing of the chest in so short a time must have been due to the cortisone. I have attended her weekly for six months. No other drug has had the slightest effect in that time."

And our fictitious cortisone was also a dismal failure.

That was in April, 1956, and the magic is still working. Fourteen months ago she could not remember a day clear of wheezing. She had a slight recurrence, and after that we have found it necessary to keep her on a maintenance dose of 50 mg. But she is up and about and active, and still most embarrassing in her gratitude.

Case C is an assistant matron who had had chronic asthma for years—never in status, but bad enough and persistent. We gave her the short-term course in May with great benefit. For three months she had no symptoms whatever. Spasm recurred rather badly after a holiday. She went back on the course but remained on duty. Probably for that reason the course did not work. At the end of October we warded her and repeated the course. By the fifth day the spasm ceased and she remained free for six months, including the Christmas rush.

Discussion

The place of cortisone and allied substances in the treatment of asthma is still not clear except in status where its usefulness is well established. Administration over limited periods can also be invaluable at all ages in patients who are not, strictly speaking, in status asthmaticus. In the elderly chronic bronchitic we have used it in two ways. When the bronchial obstruction is severe and not responding to antibiotics and antispasmodics the early use of cortisone, while the antibiotics are continued, is often helpful. Many of these patients, though making a partial recovery with standard measures, continue to have bronchial obstruction after even two weeks' treatment. A short course of cortisone can then be helpful. It reduces the hospital stay and saves beds at a time when they are precious in areas where chronic bronchitis is endemic. It has been used successfully in the presence of pulmonary heart-disease with congestive failure and in patients with hypertension where the heart-failure may have had a mixed ætiology.

The chronic asthmatic patient who has reached the stage of protracted invalidism presents the difficult problem. Is cortisone justified? In ours and other series the long-term results in carefully conducted control series are not statistically convincing, but there are cases where long-term cortisone seems to have rescued patients from complete invalidism. It is likely that not more than a third of patients can be expected to gain long-continued benefit, and yet, provided that only asthmatics who have reached a state of invalidism are chosen, a trial of cortisone does seem to be justified.

It must start with a big dose (300 mg.) decreasing by 25 mg. daily until the supply ceases. This is very important. The course can always be repeated in full. When a patient breaks down quickly, it is advisable to wait two or three weeks and repeat the course. In this instance it may be necessary to maintain a dose of 75 mg.—preferably for a limited time, and the patient must understand this, or failures will become addicts and useless and dangerous treatment has to be continued. In the successful cases it may be found that improvement can be maintained only with continued use of cortisone. While it is maintained, this is justified.

The ætiology of asthma remains an enigma. Allergy, infection, and anxiety receive different emphasis from different authorities. Whether the anxiety (when present) is primary, or secondary, to the asthma is even more difficult to assess. If a patient with severe incapacitating asthma can be rendered spasm-free and allowed to return to normal life there is a possibility of a reasonable remission. With this hope the use of cortisone on the lines suggested would always seem worth while when, and only when, all the usual measures have failed.

Conclusions

Oral cortisone has a useful place in the treatment of status asthmaticus and of picked cases of severe chronic asthma, provided that it is given initially on a short-term basis. The course can be repeated from time to time if necessary.

Long-term treatment with cortisone should be avoided if possible.

Cortisone can often be usefully combined with antibiotics.

In our experience cortisone given during pregnancy does not have any deleterious effect on mother or child.

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ADENOVIRUS EYE INFECTIONS IN ABERDEEN

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CLINICALLY adenovirus infections of the eye may be either part of a general respiratory illness, as in pharyngo-conjunctival fever, or a disease apparently confined to the eye, as in epidemic keratoconjunctivitis (E.K.C.).

Reports suggest that the respiratory manifestations of infection with this group of viruses are common in the United States and possibly in this country (Tyrrell et al. 1956), but much less is known of the types and prevalence of eye infections here. These vary in importance from simple acute follicular conjunctivitis, which usually clears up in about ten days, to a severe conjunctivitis with corneal damage in the form of infiltrations or opacities, which may persist for months or years.

Certain of the serological types of adenovirus seem to be associated with recognisable clinical illnesses, but it is still not clear whether such associations largely depend on inherent properties of the particular virus types or are determined by epidemiological considerations, such as the route of the infection and age of the patient. It is sometimes thought that clinical E.K.C. is good evidence of infection with type-8 virus; Fowle et al. (1955) and Sage and Siue (1956) have, however, found that corneal opacities can occur with type 3, and other types may possibly cause similar damage. Acute simple conjunctivitis, on the other hand, may apparently be caused by almost all of the known types of adenovirus, whereas in epidemic pharyngoconjunctival fever isolations have mainly been of types 3 and 4 (Jawetz et al. 1956). Most of the investigations on eye infections have been undertaken in the United States; the opportunity was therefore taken to study the later stages of an outbreak in Aberdeen during 1956.

Infection in Aberdeen

The increase in the number of cases of conjunctivitis began in February, 1956, reached its highest incidence during April and May, and continued until August, 1956. Most patients were treated at the Aberdeen Eye Institution, a dispensary visited daily by one or other of five local ophthalmic surgeons, but under immediate charge of a Sister and a nursing assistant. Undoubtedly many cases were seen only by general practitioners; others were referred to the dispensary when antibiotic therapy failed. At the height of the outbreak, with the staff overwhelmed and standing-room only in the dispensary waiting-room, many patients must have sought help elsewhere. Few cases were seen at the outpatient department of the Royal Infirmary and none at the Royal Aberdeen Hospital for Sick Children. As soon as the great infectivity of the condition was appreciated, an attempt was made to localise treatment within the Eye Institution so as to minimise risk to hospital patients.

Only an estimate can be made of the number of cases of virus infection of the eyes treated at the dispensary, because it was impossible for an oculist to see them all. The records suggest that there were 200–250 cases. New patients registering at the dispensary for the first six months of 1956 showed an unexpected increase of 774, whereas for the whole year 1000 fewer patients were treated than in 1955. No change has taken place in the section of the community using the dispensary, but there has been a consistent decline in attendance for some years. Patients examined by an oculist and diagnosed clinically as having viral conjunctivitis numbered 76, of whom 57 were males. It is this group with which we are concerned.

With the exception of the very young, patients were of all ages, the youngest being aged 6 years; 9 were of school age and 16 were aged less than 20. 13 patients were aged 55 or more. Patients lived in all parts of the city, but (as expected from the situation of the dispensary practice) most were manual workers or members of their households. Often whole families appeared to have had the infection although only 1 or 2 members came for treatment. There were 13 housewives in the group and 15 engineers employed in different motor or electrical workshops. The occupations followed by other patients were varied and, apart from engineers and 4 medical personnel, of whom 1 was an oculist, nothing suggested a particular occupational risk.

12 patients had had an injury to the eye before the onset of conjunctivitis, and many others complained of a foreign body which led to the first visit to the dispensary. This may have been the initial symptom of an attack, but it was not always possible to exclude cross-infection within the dispensary. Indeed the risk is so great that we think it likely that this occurred in a few cases, as has been reported elsewhere (*Canadian Medical Association Journal* 1956).

Apart from the dispersal of cases both as regards domicile and place and type of occupation the disease appeared to be spread by close personal contact and (as already mentioned) often within the family. Reliable information about the time of exposure to infection in 3 patients suggested incubation periods of seven, seven, and twelve days. The incubation period is usually given as about 7–10 days.

Clinical Findings

Patients usually came to the dispensary on the fourth day of symptoms, but some were seen as early as the first, and others as late as the fourteenth day. The earliest complaint was almost always a feeling of a foreign body, usually in one eye. A generalised conjunctivitis rapidly developed with mucoid discharge, some chemosis, and profuse lacrimation, especially when the cornea was involved. No patient had a purulent discharge. Large smooth follicles developed, particularly in the lower fornix. In only a few cases were there swelling and pain of the preauricular lymph-nodes—an unexpected finding.

Only 1 patient complained of sore throat at the time of examination, and questioning did not elicit any association with respiratory infection among the other patients. The main clinical findings were as follows:

Main Clinical Signs in 76 Cases of Suspected Viral Conjunctivitis

Simple conjunctivitis	30
Corneal infiltrates	37
Corneal ulceration	4
Superficial punctate keratitis	10
Filamentary keratitis	2
Pseudomembranous conjunctivitis	1

Of the 76 patients 44 had corneal involvement, and all of these patients were aged 15 or more. Ulceration of the cornea was relatively slight, and in no case was vision seriously or permanently affected. Much more alarming were the 37 cases in which subepithelial infiltrates or opacities developed in the corneæ. These were sharply circumscribed and nummular in appearance and usually were noticed about 10–14 days after the onset of symptoms. The patients seemed to be unaware of their presence, and often they were discovered when the acute condition had subsided and recovery seemed complete. The spots gradually decreased in number and density; they were most readily seen with a +12 lens of an ophthalmoscope, but later they could be detected with focal light and in some cases with the naked eye. In some cases the lesions persisted for several months, but doubtless they will fade in time. In about half the 76 patients both eyes were affected. Brief clinical notes on 4 illustrative cases follow:

Case 1.—A butcher, aged 25, was treated by a chemist for a suspected foreign body in his eye on May 25, 1956, but the condition became worse, and he was seen three days later with typical viral conjunctivitis of his right eye. Two days later the condition had much improved, but on June 4, 1956, he had developed two nummular spots on his right cornea, and his left eye had become infected. His left cornea was never involved, but by June 11, 1956, there were many infiltrates in his right eye, although his vision was 6/4·5 (3 letters). On June 25, 1956, the cornea was completely clear. Type-8 virus was isolated.

Case 2.—A schoolgirl, aged 12, reported on May 18, 1956, with corneal abrasion and a subtarsal foreign body in her left eye. She reported back eight days later to say that conjunctivitis had been present for two days, and she now had typical virus infection. Three days later the cornea was described as looking "sodden," but no infiltrates developed. By June 5, 1956, the condition had cleared and there was no involvement of the cornea. Type-8 virus was isolated and this may have been a case of cross-infection in the dispensary.

Case 3.—A fish worker, aged 15, reported with pain in the right eye for one day. This was a typical viral conjunctivitis without pus formation but with large swollen follicles. The patient was treated with 'Collosol Argentum,' and the condition cleared up rapidly. On Nov. 8, 1956, there was a corneal scar resembling that of a dentritic ulcer, but otherwise the eye was normal. Type-7 virus was isolated.

Case 4.—A housewife, aged 35, with four days' history of a bloodshot right eye and three days' history of a bloodshot left eye had no systemic complaint. This was a typical follicular conjunctivitis of both eyes without corneal involvement. The condition cleared up in a week. Type-1 virus was isolated.

Of the 76 cases the right eye was infected in 14, the left eye in 25, and both eyes in 37. In bilateral infections there was usually an interval of two to five days before the second eye became infected.

Laboratory Investigations

During the earlier months of the outbreak eye cultures or swabs were examined for the usual bacterial pathogens. Four of twenty-five specimens gave a scanty growth of coagulase-positive staphylococci; the remainder either were sterile or yielded only organisms commonly found in non-infective conditions of the eye. Smears taken directly from the affected eyes showed a predominantly mononuclear cell exudate; no inclusion bodies were found.

Later in the outbreak conjunctival scrapings from the palpebral conjunctivæ of 26 patients were dispersed in a small volume of tissue-culture medium and inoculated into two or more tissue-culture tubes. At first human-carcinoma HeLa cells were used to isolate virus, but the results were consistently negative. These tissue cells were grown in human-serum medium and washed thoroughly three times before being changed to a medium containing 5% rabbit serum. Failure to isolate virus on these cells was unexpected, but it may have been due to the inadequacy of the particular strain of cells used or to the slow rate of multiplication of the type of virus.

Subsequent attempts at isolation were made on human embryonic kidney epithelial cultures growing in a medium containing 2% calf serum. These cultures appeared to be much more sensitive and were used routinely. The recovered viruses were identified and neutralisation tests done using type-specific rabbit antisera mixed with an estimated 100 T.C.D.$_{50}$ of virus. Mixtures were added to tubes of Chang's liver-cells grown in a medium containing 5% normal rabbit serum. All strains of virus were checked by cross-neutralisation tests. Neutralising antibody titrations on human sera were made in human embryo kidney cultures; according to the volume of patient's serum available, control tests were also made with other types of adenovirus. Hetero-specific neutralising antibodies were not found. Complement-fixation tests were also made on patients' sera with type-4 and type-8 antigens; these gave little additional information and are not described.

Laboratory confirmation of clinical adenovirus infection requires both the isolation of the strain of virus concerned together with a demonstration of an appropriate rise in titre of antibody at the relevant time. As is well known, complement-fixing antibody is common to the whole group of adenoviruses, whereas neutralising antibody is type-specific. Because many patients were symptom-free within 7–10 days of the onset of infection it was often difficult to secure the necessary specimens of serum for adequate tests. In some cases only conjunctival scrapings were received, in others only a single blood specimen. The results in cases where laboratory evidence is conclusive or strongly suggestive are shown in table I.

Serological tests were also made on single specimens received from patients who had recovered from the disease. These are necessarily of slight value, but occasional findings, as in a patient with a neutralising antibody titre of 1 : 16 to type 8-virus three months after a clinical attack of E.K.C. with persistent opacities, were suggestive. It is nevertheless possible that the serological response in cases of this sort was unrelated to the eye infection. In addition to the type-8 strains referred to above, one type-8 strain was isolated from a patient who had clinical E.K.C. but no rise of type-specific antibody. From another case of acute simple follicular conjunctivitis type-1 virus was isolated, but serological tests showed only a twofold rise of type-specific antibody. Such cases have not been included in table I.

It was hoped that laboratory investigation of these cases of eye infection might help to determine not only

TABLE I—TYPES OF VIRUS AND NEUTRALISING ANTIBODIES IN EYE INFECTION

Case no.	Type of adenovirus isolated	Type-specific serum antibody	
		Acute	Convalescent
1	8	< 4	64
2	8	< 8	32
3	7	< 4	64
4	1	< 8	16
5	(8)*	< 8	64
6	(8)*	< 2	8
7	(8)*	< 4	16
8	11	< 2	8

* Specimen not received for isolation of virus.

TABLE II—CLINICAL FINDINGS IN EYE INFECTIONS AND TYPE OF ADENOVIRUS RESPONSIBLE

Sex and age (yr.) of patient	Main clinical findings	Type of virus isolated
M 25	C.I. (b)	8
M 44	C.I. (b)	8
F 12	S.C. (u)	8
F 35	S.C. (b)	1
F 22	S.C. (u)	1
F 15	S.C. (u)	7
F 22	S.C. (b)	11

C.I., corneal infiltrate. u, unilateral. S.C., simple conjunctivitis. b, bilateral.

the nature and type of virus responsible but also whether clinical E.K.C. was associated with more than one type of virus. Unfortunately the number of specimens sent to the laboratory was insufficient for this purpose. Nevertheless the evidence suggests that corneal opacities developed mainly in patients with a type-8 infection. Although only a small number of other adenovirus types were isolated, all of them came from patients with a simple follicular conjunctivitis without opacities (table II).

In addition to the three type-8 cases shown in table II two other type-8 strains were isolated from pools of material prepared from the supernatant fluids of HeLa-cell cultures inoculated with conjunctival scrapings. These two pools were prepared from cultures from two and from three patients; and, although no cytopathogenic effect was noted in the original HeLa-cell cultures, subsequent passage on human embryonic kidney isolated the two type-8 strains. Attempts were also made with the aid of type-8 antisera to isolate other types of adenovirus in these pools, but none was found. Both pools were derived from patients in the acute stage of conjunctivitis, and all these patients later developed corneal infiltrates.

Discussion

Adenovirus infections of the eye in Aberdeen in 1956 were clinically of two types: a simple acute follicular conjunctivitis which cleared up rapidly, and a more serious condition indistinguishable from the first during the early stages but later showing corneal involvement with infiltrations which tended to persist for weeks or months. These small round subepithelial corneal opacities are typical of E.K.C., which may, as in the present outbreak, cause little impairment of visual acuity but, in other outbreaks, have caused severe disability.

Several earlier descriptions of outbreaks of E.K.C. have suggested that E.K.C. occurs mainly among engineering or shipyard workers, and Sommerville (1957) found evidence of a large outbreak of this type in Glasgow. He failed to isolate virus from conjunctival swabs from 50 patients but isolated type-8 virus from the fæces in 2 cases. In Aberdeen about a fifth of the patients were engineers, but there was no concentration in any one workshop, and most patients followed miscellaneous occupations.

There was no corneal involvement in any of the 9 patients of school age, although corneal opacities developed in 37 of the remaining 65 patients. In the child aged 12 years, in whom a type-8 virus was isolated, the disease was of the simple follicular type without corneal involvement. In this case and in some others we have been concerned about the possibility of cross-infection which has been frequently reported in the United States and may well be much more common than is generally realised. The decision to confine the treatment of virus conjunctivitis within one dispensary and to avoid admitting such cases to a hospital eye ward were obvious precautions; the sterility of ophthalmic instruments and solutions must also be constantly in mind, particularly as a complaint of foreign body in the eye is the commonest initial symptom.

In treatment sulphacetamide ('Albucid') and a wide variety of antibiotics were used depending on the whim of the individual ophthalmic surgeons. They exerted no measurable effect on the disease. Most of the later cases were treated with collosol argentum. 'Neo-cortef' was used when the cornea became involved, but although this gave relief and comfort it did not shorten the duration of symptoms, which seldom persisted beyond fourteen days.

The most significant part of the laboratory investigation was the isolation of five strains of type-8 adenovirus from patients with E.K.C. This supports the widely accepted view that type-8 adenovirus can cause E.K.C., although E. Jawetz claimed, at a recent symposium in San Francisco, that only three strains of this type had been isolated from the conjunctiva. Though this statement may be no longer true it does emphasise that the evidence for the association is mainly indirect. Jawetz et al. (1955) themselves had examined sera from 25 patients living in four areas of North America where outbreaks of E.K.C. had occurred in the previous four years and in all instances obtained antibody titres consistent with type-8 infection.

Fowle et al. (1955), on the other hand, isolated type-3 virus from three E.K.C. patients and claim to have reproduced the disease in a volunteer by conjunctival installation of tissue-culture fluids infected from the clinical cases. Other workers claim that type-7 virus may also cause E.K.C. Vivell et al. (1957) in a recent outbreak in Germany failed to isolate virus from 50 cases but, using a type-4 antigen, found significant rises in complement-fixing antibodies.

Although we are well aware of the inadequacy of the numbers and types of specimens available for investigation in the present outbreak, there is both cultural and serological evidence that several of the patients developing corneal opacities were infected with type-8 virus. The associated rise of type-specific neutralising antibody during the course of a clinically typical infection in which type-8 virus is isolated is presumptive evidence of cause and effect. On the other hand, there is no reason to expect that type-8 virus invariably produces the E.K.C. syndrome; in case 2 it gave rise to a simple conjunctivitis indistinguishable from that caused by most other types.

There are several accounts of large outbreaks in which the number of cases developing opacities was small: in the 1951 outbreak at the Ford plant in Windsor, Ontario, only 89 of 549 patients developed corneal lesions (McGavin et al. 1953). In this and in many other reported outbreaks, however, we do not know what type or types of virus were involved. The finding during the present investigation of cases of simple follicular conjunctivitis caused by types 1, 7, and 11 is not surprising and merely underlines the danger of generalising about outbreaks when only a few cases are studied.

Summary

During 1956 there were many cases of conjunctival infection in Aberdeen; 76 of these were diagnosed clinically as viral conjunctivitis. Of the 76 patients 37 had nummular corneal opacities characteristic of epidemic keratoconjunctivitis.

Five strains of type-8 adenovirus were isolated on human embryonic kidney tissue-culture from conjunctival scrapings. Neutralising antibody estimations confirmed the type of infection in some cases.

Four other strains of adenovirus belonging to types 1, 7, and 11 were isolated during the same period.

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SYSTOLIC MURMURS IN HEALTHY CHILDREN AND IN CHILDREN WITH RHEUMATIC FEVER

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THE interpretation of systolic murmurs in children is often difficult because innocent murmurs are common in childhood, and there is no unanimity of opinion on the characteristics of a systolic murmur which indicate its origin. The incidence of systolic murmurs in childhood has been variously assessed at 20% (Wilson 1940), 47% (Friedman et al. 1949) and 90% (McKee 1938).

At the turn of the century a systolic murmur was regarded as evidence of organic disease. The opposite view was prevalent a generation later, and it was considered that an apical systolic murmur was of no greater significance than to attract attention to a thorough examination of the heart. Investigation by clinical and phonocardiographic means during the past twenty years has led to a more accurate analysis of the different types of systolic murmur which occur in health and disease (Evans 1947, Harris and Friedman 1952, Brigden and Leatham 1953, Leatham 1955, Wells 1957).

It is widely recognised that a rather high-pitched pansystolic murmur which is loudest at the apex indicates mitral-valve disease. Sometimes, however, early systolic murmurs and late systolic murmurs may be attributed to disease of the mitral valve. Mid-systolic murmurs are related to flow into the great vessels and are heard frequently at the base of the heart. A mid-systolic murmur is more difficult to assess than one which fills systole, because most innocent murmurs are mid-systolic. Although many recent authors emphasise the timing of systolic murmurs, a joint American and British team studying rheumatic fever placed most emphasis on the loudness and the radiation of the murmur, ignoring its time of onset and duration (Medical Research Council and American Heart Association 1955). The purpose of our present work is to reassess the incidence and character of systolic murmurs found in healthy children and analyse those found in children with rheumatic fever.

Method

100 healthy children aged 3–14 years and 200 children with rheumatic fever were examined for this study. Phonocardiograms were recorded in 50 of the healthy children and 150 of the children with rheumatic fever. The apparatus used was a multi-channel cathode-ray phonocardiograph, which has been described elsewhere (Besterman and Harrison 1953). The criteria for the diagnosis of rheumatic fever were those laid down by the Medical Research Council and the American Heart Association (1955). The three grades of intensity used in describing a murmur are those used in that report. (Grade 1 are very soft murmurs, grade 2 are soft to moderate, and all loud murmurs are grade 3.) A diastolic murmur was repeatedly sought whenever the nature of a systolic murmur was in doubt.

Results

Healthy Children

Of the 100 healthy children 96 had systolic murmurs on clinical examination. These murmurs were always short, usually soft, and occasionally of a superficial scratchy nature suggesting an exocardial origin. They were maximal at the pulmonary area and left sternal edge in 71 children. In 20 the murmur was heard over a somewhat wider area of the præcordium, and it was maximal at the apex in 5 only. 5 of the children had moderately loud murmurs (grade 2), and 3 of these had considerable chest deformity. Phonocardiograms confirmed the clinical findings and showed that these murmurs were not usually of a uniform frequency (fig. 1); their onset was often delayed after the first sound, and they invariably ended before the second heart sound. Changes in posture or respiration did not produce any distinctive changes.

Rheumatic Fever

A systolic murmur was heard in all of the 200 patients with rheumatic fever. Most of these murmurs were loud. Of 100 patients seen in the first attack 33 had only a systolic murmur, which was short and indistinguishable from those heard in healthy school-children. 31 others had systolic murmurs which were also within the normal range but were associated with diastolic murmurs, indicating rheumatic carditis. The remaining 36 of these patients had apical murmurs which clearly filled systole; these were associated with diastolic murmurs in 30 cases, and in the remaining 6 a pansystolic murmur was the only clinical abnormality. Organic murmurs were thus present in 67% of these patients seen in a first attack.

In the group with more than one attack only 9 had short systolic murmurs indistinguishable from physiological ones, and 27 had short systolic murmurs associated with diastolic murmurs, but 64 had a pansystolic murmur as well as a diastolic murmur. Organic murmurs were thus present in 91% of those who had more than one attack.

Phonocardiograms showed that the isolated apical systolic murmur of rheumatic fever was pansystolic (fig. 2*a*) and the basal systolic murmur associated with an aortic diastolic murmur was always short (fig. 2*b*).

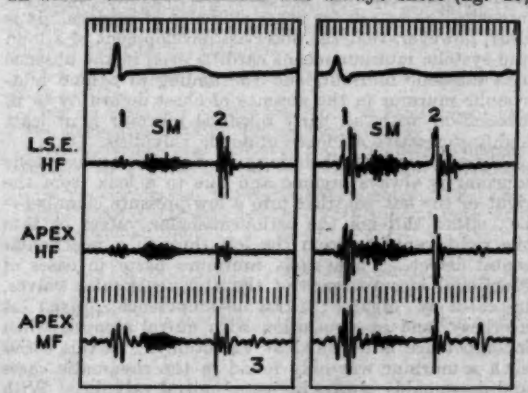

Fig. 1—Phonocardiogram in 2 healthy children: LSE, left sternal edge (4th interspace); HF, high-frequency record; MF, medium-frequency record; SM, systolic murmur.

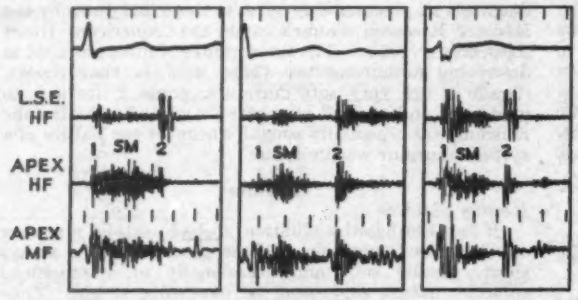

Fig. 3—Phonocardiograms in rheumatic heart-disease: *a*, apical pansystolic murmur of mitral valvulitis; *b*, aortic systolic and diastolic murmurs; *c*, short apical systolic murmur and short mid-diastolic murmur in mitral valvulitis.

In 5 cases only there was a systolic murmur maximal at the apex and ending before the second sound but associated with a delayed diastolic murmur (fig. 2*c*); these were considered to be of mitral origin.

When there was a loud basal systolic murmur, it was nearly always possible to hear a diastolic murmur. In contrast only 4 of 42 lone mid-systolic murmurs were loud.

In the whole group of patients with rheumatic fever 100 (50%) had an apical pansystolic murmur on auscultation, and 72 of 150 phonocardiograms recorded in this group showed a murmur filling systole. In 12 cases this murmur disappeared with recovery from the acute phase of the illness, leaving only a soft basal or a short apical murmur.

Discussion

Short systolic murmurs are found in most healthy children and are sometimes moderately loud, particularly in the presence of chest deformity. In rheumatic fever, short and loud systolic murmurs are very common in patients who have other evidence of carditis, but in the individual case these murmurs cannot be distinguished from the normal systolic murmurs, either in length, loudness, pitch, or site of maximal intensity. In any patient with rheumatic fever having a short systolic murmur, the certain recognition of carditis and aortic valvulitis in particular must depend on other evidence, such as the finding of a diastolic murmur. Such diastolic murmurs may be detected only after repeated examinations with a diaphragm stethoscope and may be heard only when the child is lying flat or slightly over on the left side with the breath held in expiration. A suspiciously loud systolic murmur in these cases should therefore intensify the search for other evidence of carditis. It is clear, however, that the observed development of a loud mid-systolic murmur means carditis even in the absence of a diastolic murmur, and the finding of a loud mid-systolic murmur in the absence of chest deformity or in association with an early diastolic murmur is at least highly suggestive evidence of aortic valvulitis.

There is now overwhelming evidence that a pansystolic murmur is always organic and due to a leak from the right or the left ventricle into a low-pressure chamber—i.e., either through the atrioventricular valves or into the right ventricle from the left through a ventricular septal defect. Pansystolic murmurs occur in cases of functional incompetence of the atrioventricular valves, in cases of organic mitral incompetence proved at necropsy, and in association with mitral stenosis when incompetence is detected at valvotomy. In this series such a murmur was only found in the rheumatic cases and presumably always indicated mitral valvulitis. With recovery from rheumatic fever, pansystolic murmurs sometimes disappear owing to healing of the valvulitis. A pansystolic murmur was never heard in a healthy child.

The most important points in the assessment of a systolic murmur in rheumatic fever are its length and site of maximal intensity rather than its overall intensity, for in early mitral valvulitis a soft but pansystolic murmur may be heard, whereas a child with sternal depression or with kyphoscoliosis may have a moderately loud but mid-systolic murmur.

Summary

Short systolic murmurs were found in more than 90% of healthy children. They are usually soft and maximal at the left sternal edge but may be loud in the presence of chest deformity.

Systolic murmurs were invariably present in children with rheumatic fever.

During a first attack 36 of 100 children had an apical pansystolic murmur; in another group of 100 who had more than one attack of rheumatic fever 64 had an apical pansystolic murmur and an additional 27 had diastolic murmurs as evidence of carditis.

Soft mid-systolic murmurs in rheumatic fever are almost certainly innocent, but there is no certain method, other than long-term observation, of proving that this is so.

The firm diagnosis of rheumatic valvulitis must depend on the finding of a pansystolic murmur or a diastolic murmur. The length of an organic systolic murmur in rheumatic fever was its principal distinguishing feature on the phonocardiogram.

We wish to thank Dr. E. G. L. Bywaters, Dr. G. T. Thomas, and Dr. J. J. Kempton for their help, and Mr. J. K. Harrison for technical assistance.

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TUBERCULOUS PLEURAL EFFUSIONS TREATED BY ANTIBACTERIAL THERAPY

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IN a previous investigation and review of the literature (Emerson 1954) I concluded that when tuberculous pleurisy with effusion was treated solely by rest in bed about 30% of adult patients developed further active tuberculosis. The present paper reports the results obtained in 102 patients with tuberculous pleural effusion treated by antibacterial therapy.

The Patients

25 of the patients were treated by me in a Royal Air Force hospital, and the other 77 were under the care of physicians who allowed me access to the patient or the records. All had been previously healthy, with no clinical evidence—e.g., cough producing purulent sputum—to suggest underlying pneumonia or bronchiectasis. None of the chest radiographs taken on admission showed

an initial parenchymal lung lesion. All the 102 patients were followed up except 2 who went abroad and have therefore been excluded from the series. All were between the ages of 15 and 28 except 3 men aged 34, 35, and 37 and 3 women aged 45, 50, and 60. There were 59 males and 41 females. 7 of the effusions were very large, 61 large, and 32 of moderate size. 1 was associated with a pericardial effusion and 1 with ascites; 2 were bilateral, and 1 of these was accompanied by ascites. The presence of an effusion was in every case confirmed by the diagnostic aspiration of typical straw-coloured fluid. In all but 3 fluids the most numerous cells were lymphocytes, and the tuberculous nature of the effusions in the 3 cases where polymorphs predominated was confirmed by culture of tubercle bacilli from the fluid or from bronchial washings. In all the patients sputum or material obtained by laryngeal swab or gastric or bronchial lavage was cultured for tubercle bacilli; positive results were obtained in 9 patients. Specimens of pleural fluid were similarly cultured for tubercle bacilli and positive results obtained in a further 17 patients.

The Treatment

25 of the patients were treated by rest in bed for at least three months, but in the other cases no minimum period of rest was enforced, and the patients were allowed to get up by easy stages when the fever and toxæmia had subsided. 96 of the 100 were treated either with a combination of streptomycin and *p*-aminosalicylic acid

TABLE I—AMOUNTS OF ANTIBACTERIAL DRUGS GIVEN

Total dose of streptomycin (g.)	No. of patients treated with			No. of patients treated with isoniazid alone
	Streptomycin and P.A.S.	Streptomycin and isoniazid	Streptomycin alone	
Less than 30	13 (4)	2	1	1* (1)
30–59 ..	32 (1)	9 (1)	1	..
60–89 ..	12 (1)	6	..	1†
90 or more ..	13	9	..	..

* Isoniazid 200 mg. daily for 28 days.
† Isoniazid 200 mg. daily for 63 days.
Numerals in parentheses indicate nos. of patients who later developed further tuberculosis.

(P.A.S.) or with streptomycin and isoniazid. The dose of P.A.S. varied from 12 g. to 20 g. a day orally; that of isoniazid was either 200 or 300 mg. a day. The dose of intramuscular streptomycin was 1 g. on any one day. In 50 cases the whole course was given by daily injections, in 8 the whole course was given by an intermittent régime, and in 38 initially by daily injection and subsequently by an intermittent régime. 2 patients had streptomycin alone. Table I shows the total amounts of streptomycin received by the various numbers of patients. 2 patients had 200 mg. of isoniazid alone daily for twenty-eight days and sixty-three days.

The Results

Duration of Fever

The total duration of pyrexia above 99°F from the start of rest in bed varied from nil in 15 patients who were apyrexial on admission to a hundred and nine days. In 54 patients the temperature was at or above 99·5°F and showed no sign of settling during a period of at least seven days' rest in bed before antibacterial therapy was started. The mean duration of the pyrexia above 99°F in these patients was thirty-one days (S.D. twenty-three days). There was a mean delay of fifteen days before the start of antibacterial therapy. The mean duration of the pyrexia after starting antibacterial therapy was sixteen days. These results can be compared with those obtained in a control group of 30 similar patients not given antibacterial therapy. In these patients the pyrexia was also at or above 99°F and showed no sign of settling during the first seven days of rest in bed; the mean duration of the pyrexia was forty-five days (S.D. fifty-seven days).

The standard error of the difference between the means of thirty-one days in the group given antibacterial therapy and forty-five days in the control group is eleven days. The difference is not even statistically significant if a correction is made for the mean of fifteen days' pyrexia before the start of antibacterial therapy.

TABLE II—NUMBERS OF PATIENTS WHO DID NOT LATER DEVELOP FURTHER TUBERCULOSIS

Year of onset	No. of patients treated	No. still without further tuberculosis on anniversary						
		1st	2nd	3rd	4th	5th	6th	7th
1949	1	1	1	1	1	1	1	1
1950	4	4	4	3	3	3	3	..
1951	19	16	15	15	15	15	..	..
1952	32	31	31	31	31	..	..	..
1953	24	24	24	24	..	..	..	..
1954	20	19	18	..	..	..	..	..
Total	100	95	93	74	50	19	4	1

Duration of Accelerated Erythrocyte-sedimentation Rate

The mean duration of the accelerated E.S.R. was compared in the same two groups of patients. It was more than four months in the 44 patients given antibacterial therapy, and just under four and a half months in the 30 controls. There was therefore no significant difference.

Duration of Effusion

The serial chest radiographs were studied and an assessment made of the time from the start of rest in bed to the first radiographs showing clearing of the fluid with no more than residual obliteration of the costophrenic angles. These times were less than three months in 42 patients, from three to twelve months in 44 patients, and from one to three years in 9 patients. Of the remaining 5 patients 1 still showed gross and 4 moderate pleural thickening when last followed up between three and four and a half years after their effusions. There was therefore no evidence that antibacterial therapy reduced the duration of the effusions.

Incidence of Subsequent Tuberculosis

The 100 patients have all attended as outpatients at a chest clinic or a hospital. The duration of the follow-up in each patient was estimated from the onset of the effusion and start of rest in bed to the most recent chest radiograph and examination. Table II shows the years in which the effusions occurred, the duration of the follow-ups, and the number of patients unaffected by further manifestations of tuberculosis on each anniversary.

Further manifestations of tuberculosis appeared in 8 of the 100 patients at the following intervals after the onset of their initial effusions:

After one month 1 patient developed a contralateral effusion.

After six months 1 patient was found to have tuberculosis of the spine, and 1 tuberculous axillary adenitis.

After a year 1 patient developed active pulmonary tuberculosis, and in 1 other patient the routine chest radiograph

TABLE III—ESTIMATED TUBERCULOSIS MORBIDITY, IN LIFE-TABLE FORM, FOLLOWING PLEURAL EFFUSION TREATED WITH ANTIBACTERIAL DRUGS

Years after onset of effusion	Probability of developing tuberculosis in that year	No. unaffected by further tuberculosis on each anniversary	No. developing further tuberculosis each year
0	0·05	100	5
1	0·02	95	2
2	0·01	93	1
3	Nil	92	0
4	Nil	92	0
5	..	92	..

showed a round shadow, 7 mm. in diameter, which did not subsequently increase in size and has required no treatment.

After eighteen months 1 patient developed active pulmonary tuberculosis.

After two years the routine chest radiograph in 1 patient showed a round shadow, 5 mm. in diameter, which did not subsequently increase in size and has required no treatment.

After three years 1 patient developed active pulmonary tuberculosis.

Discussion

The effect of antibacterial therapy on the early stages of pleural effusions is disappointing, as has previously been reported in a small controlled study (Emerson 1955). The main object of the present investigation was to assess the incidence of further active tuberculosis. No more controls were used because numerous workers have shown that, without antibacterial therapy, some 30% of patients develop further active tuberculosis (Emerson 1954). The figure of 8% for the whole of the present series of patients is considerably less than this. Falk and Stead (1956) reported similar results in patients with pleural effusions treated with antibacterial therapy but do not state the length of the follow-up.

Table III, computed by the life-table method, shows the estimated rate of development of further active tuberculosis (including further pleural effusions) following the onset of the 100 pleural effusions treated by antibacterial therapy. The estimated one-year morbidity-rate was 5%, the two-year rate 7%, and the three-year rate 8%. No patient developed further tuberculosis after the third anniversary; hence the estimated five-year rate was also 8%.

This figure of 8% at first appears to be unexpectedly high. Table I, however, shows that 17 of the patients were initially treated with less than 30 g. of streptomycin, alone or with P.A.S. or isoniazid, or less than thirty days of isoniazid alone. Such short courses of antibacterial therapy are now known to be inadequate treatment for any form of tuberculosis, and 5 of these 17 patients developed further tuberculosis. Of the 83 patients who had the equivalent of 30 g. or more of streptomycin only 3 broke down with further tuberculosis. These differences are not due to any variations in the length of the follow-up, which was, in fact, longer in the more adequately treated group. The five-year morbidity-rates for subsequent tuberculosis, again estimated by the life-table method, were 30% for the patients treated with the equivalent of less than 30 g. of streptomycin and only 4% for the patients given the longer courses of antibacterial therapy.

I conclude that antibacterial drugs, providing they are given in adequate amounts, reduce the incidence of further tuberculosis following pleural effusions.

Summary and Conclusions

100 adult patients who initially had pleural effusions with no visible parenchymal lung lesions were studied and followed up for two to seven years after the onset of their effusions and initial treatment with antibacterial drugs.

There was no evidence that such treatment reduced the duration of the effusion, the accelerated E.S.R., or the duration of pyrexia.

When not initially treated with antituberculous drugs about 30% of patients with tuberculous pleural effusions develop further active disease. 100 patients treated with antibacterial therapy were followed up. 17 of them were initially inadequately treated with less than the equivalent of 30 g. of streptomycin; their estimated five-year morbidity-rate was again 30%. In the 83 patients initially treated with more adequate antibacterial therapy the estimated five-year morbidity-rate was only 4%.

I wish to thank all the physicians who have allowed me access to their patients or their records and radiographs at Brompton Hospital, London Chest Hospital, St. George's Hospital, University College Hospital, Central Middlesex Hospital, West Middlesex Hospital, and the Canadian Red Cross Memorial Hospital at Taplow. This work was done while I was receiving a grant from the research committee of the Brompton Hospital.

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New Inventions

EMERGENCY RESPIRATOR

THREE years ago the department of anæsthetics in Durham University [1] proposed a design for an artificial respiration device which could quickly be constructed in an emergency. In the light of experience a new design has emerged which is simpler and even quicker to make. The possibility of an emergency with many patients who need artificial respiration is a remote one, but it seems real enough to warrant a brief description of the new design.

The device is intended for intermittent positive-pressure respiration through a tracheostomy tube. This technique probably will maintain lung ventilation in all apnœic patients. It may not be necessary or even desirable in many instances, but in a major emergency it would seem too much to hope that cabinet or cuirasse respirators could be manufactured in sufficient quantity.

The device comprises a source of air at low pressure (50/100 mm. Hg) and a valve-control device hereinafter called the respirator.

Source of Air

The source of air can be various. Injectors fed from oxygen or air cylinders or high-pressure air compressors, and blowing into reservoir bags, have been used. Even hand- or foot-operated bellows similarly blowing into reservoir bags could be used in the event of a power failure. Our own plans, however, are based upon the use of 'Electrolux' vacuum cleaners. A single domestic model, working as a blower, provides sufficient air for at least six respirators. If such a cleaner is used to operate a single respirator, it is best to run it at a greatly reduced voltage.

Respirator

There are five main parts (fig. 1): valve-box; control bag; flap; magnet; and weights.

The *valve-box* comprises an upper chamber connected to the air-supply; a central chamber connected by a short tube to the patient's tracheostomy tube and by a side-tube to the control bag; and a lower chamber open to the outside air. The central chamber is of somewhat smaller diameter than the two end-chambers, so that shoulders are formed which act as seats for the sponge-rubber facings on the discs of the valve-spindle. The freely fitting valve-spindle is a length of threaded rod upon which there are two flat sponge-rubber-faced discs facing one another. In practice the lower end of the rod projects downwards and fits loosely into a clearance

1. Pask, E. A. *Lancet*, 1954, ii, 217.

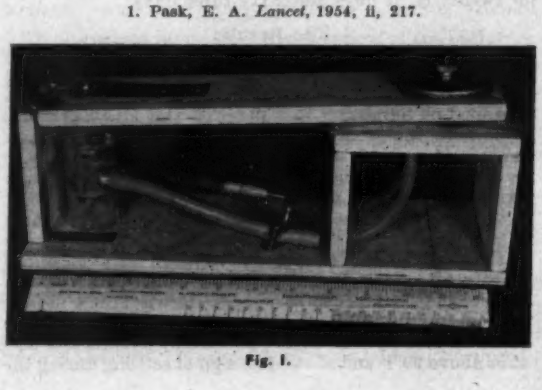

Fig. 1.

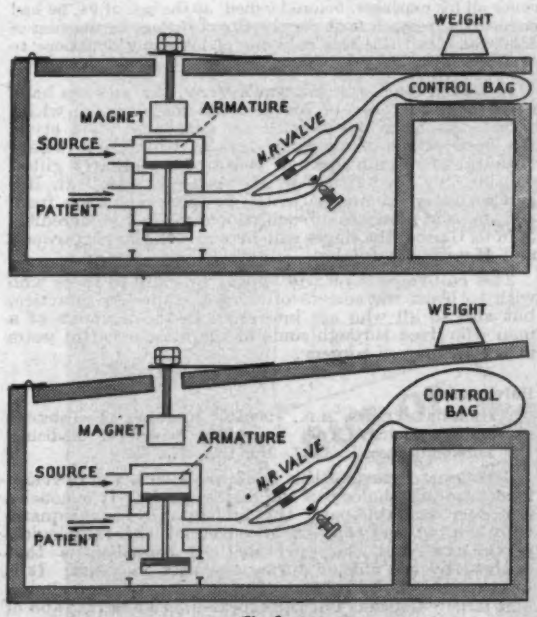

Fig. 2.

hole in the base. This prevents any tendency to "chattering" by the otherwise completely free valve-spindle. At the top of the valve-spindle is a mild steel disc (armature) on which the magnet exerts its attraction. When the valve-spindle is down, the air from the source is cut off and the patient's airway open to the outside air through the lower valve aperture. When the valve-spindle is drawn up, the lower valve disc must be forced against its shoulder. For this to be possible, the top of the valve-spindle must not quite touch the closed top of the valve-box. The valve-box must be made from non-ferrous material. Brass is useful but mates rather unhappily with rubber. Aluminium will do or even, at a pinch, hardwood. Because of its ease of working and the ease with which the side-tubes and top can be fixed with chloroform, 'Perspex' clearly commends itself for the job.

The *control bag* should have an area of about 20 sq. in. when flat. It can be made from plastic sheet or it may be the bag from a B.L.B. mask or even a toy balloon.

The *flap* is hinged at one end, its free end resting upon the control bag. The flap rises and falls as the control bag is inflated and deflated.

The *magnet* ('Eclipse Button Type C' or similar) is fixed to the flap. A leaf-spring of phosphor-bronze sheet is used to attach the magnet to the flap (fig. 2). Neither in theory nor in practice is this leaf-spring essential to the operation of the machine, but its use adds to the snappiness of action and eliminates the need for any precise alignment of the magnet.

The *weights* are pieces of any heavy metal attached to the flap by a nut and a bolt.

Mode of Operation

Let us imagine that the control bag is deflated and the flap is down (fig. 2). The magnet has approached the armature on the valve-spindle and has drawn it upwards so that the upper valve is open and the lower valve closed. Air passes from the source to the patient and inflates the lungs. It also passes through the non-return valve and the alternate restricted tube (screw-clip) of the control bag. As the pressure rises in the patient's lungs, so it does in the control bag. Eventually the pressure in the control bag is sufficient to raise the flap against the downward pressure of the weights. The flap rises and carries the magnet upwards away from the armature on the valve-spindle. The attraction of the magnet then becomes too weak to hold up the armature, and suddenly the valve-spindle drops, partly under its own weight and partly owing to the pressure of the air source, for the upper valve is "self-sealing." Now the air supply is cut off, and the patient's lungs become connected to outside air because the lower valve is now necessarily open. The patient's lungs deflate immediately, but the control bag cannot deflate so readily, because free egress of air is checked by the non-return valve. Air leaves the control bag, however, at a controlled rate through the restricted channel, and the bag gradually deflates. Necessarily, the flap falls and the magnet approaches the armature. When it comes close, it snaps the armature up, opening the upper valve, closing the lower valve, and initiating a new inflation of the lungs.

The amount of weight resting upon the flap determines the pressure to which the lungs are inflated. The degree of restriction of the restricted channel through which air leaves the control bag determines the repetition-rate of the respiratory cycle.

The respirator could be elaborated to permit the control of "negative pressure" in exhalation. A "triggering valve" [2] could be added to make the machine patient-sensitive. However, if these elaborations were desired, quite a different geometrical lay-out would be preferable. The present lay-out is intended for hurried construction. A respirator has been made single-handed in 3 hours and 40 minutes. If a quantity were needed and the work divided, this time could greatly be reduced.

Provided that the simple principles are respected, very few of the dimensions are critical. I can, however, send copies of drawings showing the dimensions which we have used to any doctor who forwards an appropriately stamped foolscap envelope.

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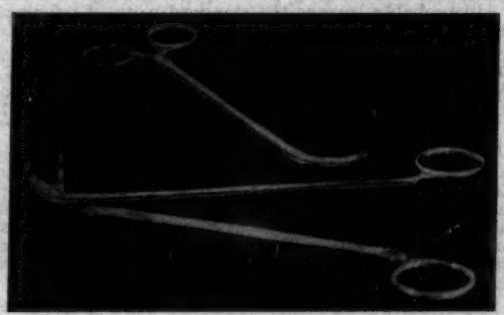
COMBINED DISSECTOR AND LIGATURE CARRIER

THE instrument shown in the accompanying figure was designed primarily for dissecting blood-vessels which are deeply seated and relatively inaccessible.

Its shape facilitates dissection at right-angles to the operator, which is often an advantage when access is limited by the small size of the external wound.

This instrument has been particularly useful in dissection of the left gastric artery in œsophago-gastrectomy, and of the blood-vessels at the hilum of the lung.



Mobilisation of the great curvature of the stomach is speeded up by using this instrument both as a dissector of the vasa brevia and as a ligature carrier.

It has been designed so that its jaws move parallel to the plane of dissection—an obvious advantage in the dissection of friable blood-vessels.

It has been made for me with right and left curves in two sizes, 8 inches and 7 inches, by the Genito-Urinary Manufacturing Company, London.

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2. Horton, J. A. G., Inkster, J. S., Pask, E. A. *Brit. J. Anaesth.* 1956, 28, 169.

Reviews of Books

The Clinical Application of Antibiotics

Vol. III. *Chloramphenicol and the Tetracyclines.* M. E. FLOREY, M.D. London: Oxford University Press. 1957. Pp. 393. 84*s*.

BOOKS about new drugs generally appear in two waves. First, rushed through like stop-press news, come small handbooks with simple dogmatic instructions about how the new drugs should be given. Later the larger books roll leisurely forward to summarise and evaluate experience gained in the full exploration of the particular treatment. Lady Florey's new book belongs to this group, and it records in masterly manner the information now available about chloramphenicol and the three tetracyclines, chlortetracycline (aureomycin), oxytetracycline (terramycin), and tetracycline ('Achromycin'). It is thus a continuation of her earlier work which began in 1952 with penicillin; and a fourth volume is promised in a few months on erythromycin, carbomycin, and other antibiotics. Like the other members of the series, this book is compiled in the library from the publications of other workers, rather than formed at the bedside from the writer's own personal experience. As such it enjoys advantages as well as disadvantages: while guidance on any particular question is less authoritative and clear, it is more reliable and more free from error due to personal prejudice or mistake. It will be valuable chiefly to the experienced clinician, who can use it to compare his own impressions with the findings of others, strengthening his views when they agree and warning him to reconsider his conclusions when they conflict.

This careful compilation of all the available information is a guide to considered judgment, and a guard against arbitrary impressions based on scanty facts. The time is now ripe for such an evaluation of these antibiotics, for sufficient time has elapsed since their introduction for their powers and dangers to be assessed. Lady Florey takes each compound in turn and describes its properties, its administration, and its possible toxic effects; its use in the treatment of diseases due to specific organisms is then discussed, and finally its therapeutic use is considered by systems. Papers up to June, 1956, have been included, but more attention has been given to the earlier papers than to the later ones, which merely emphasise results already corroborated.

Considering the vast amount that has been published on this subject, the book is remarkably concise. There is an extensive bibliography of 42 pages and a good index. It will probably become the standard work of reference for the clinical application of these antibiotics.

Sir George Buckston Browne

JESSIE DOBSON, B.A., M.SC.; Sir CECIL WAKELEY, K.B.E., D.SC., F.R.C.S. Edinburgh: E. & S. Livingstone. 1957. Pp. 152. 25*s*.

THE name of Sir George Buckston Browne is familiar to British surgeons as that of a generous benefactor to the Royal College of Surgeons. Few of them, however, know much about the man himself, or about the hard work and skill which earned him a substantial fortune. They will read with interest the account of Sir Cecil Wakeley, who was his close friend for fifteen years.

Buckston Browne was born in 1850 into a family which was well-to-do but conducted on very austere lines. He was often unhappy at home, and at the age of 18 he left his birthplace, Manchester, and came to London to study medicine. He was no dullard (he won a gold medal in chemistry) but he seems to have been dogged by bad luck in examinations. He failed his 1st M.B., qualified with the M.R.C.S. diploma, and was rejected at a final-fellowship "practical." Curiously enough he never attempted either examination a second time, though the lack of any higher qualification ensured from the outset that he would never obtain a hospital appointment.

Instead he served Sir Henry Thompson, the famous urologist, as an assistant. In time he became a consultant surgeon in his own right, and specialised in the same subject. How successful he was can be deduced from the fact that though he came to London with an allowance of £3 a week to cover all his expenses, before he died, at the age of 94, he had endowed a research farm for the Royal College in the sum of £100,000. And this was only one of his many donations to similar bodies.

In telling Buckston Browne's story, the authors have made abundant use of his personal memoranda, which reveal him as a writer with an unusually vivid style. His descriptions of his early days at University College Hospital are reminiscent of those of a similarly gifted surgeon, Sir Frederick Treves. And—because "B. B." had so many famous patients—in these pages are fresh and unusual glimpses of such people as George Meredith, Manuel Garcia (the singer who invented the laryngoscope), and Horatio Bottomley.

This enjoyable book will appeal not only to those who wish to learn the secrets of success in private practice, but also to all who are interested in the memoirs of a man who lived through some of the most eventful years in the history of surgery.

Pelvimetry

HERBERT THOMS, M.D., emeritus professor of obstetrics and gynecology, Yale University School of Medicine. London: Cassell. 1957. Pp. 120. 37*s*. 6*d*.

THE greater part of this book deals with the development and morphology of the female pelvis. It is concise but very readable, and the bibliography is adequate. Only a quarter of the text is concerned with radiological pelvimetry, and the only method described is that evolved by the author during the past 25 years. It is unfortunate that Professor Thoms's technique includes, and largely depends on, the supero-inferior radiograph of the pelvic inlet, which is known to entail a very large dose of radiation to both fœtal and maternal gonads. Most British workers believe that a modified anterosuperior view of the pelvic brim gives enough information with a very much smaller exposure.

Microdiffusion Analysis and Volumetric Error (4th ed. London: Crosby Lockwood. 1957. Pp. 465. 42*s*.).—The exploration of new paths in biochemistry has been made possible largely by the development of new techniques; and there are now a number of books each devoted to a particular analytical technique, such as colorimetry, spectrophotometry, and chromatography. Prof. E. J. Conway's great contribution to microanalysis has been the technique of microdiffusion, and his textbook, first published in 1939, is now a well-established classic. The third edition was published seven years ago and the book has now been brought fully up to date. The new edition deals particularly with the estimation of blood-ammonium levels—much used lately in the study of hepatic disease and especially hepatic coma. This development has probably contributed more than any other to the acceptance of microdiffusion analysis as a routine laboratory procedure. In addition to new applications of the technique, there have been improvements in the apparatus itself, and of particular note is the one in which the microdiffusion unit is sealed without a fixative because the lid fits in a circular groove containing some of the fluid used to liberate the volatile substance.

The Normal Child (2nd ed. London: J. & A. Churchill. 1957. Pp. 356. 33*s*.).—This early second edition of Prof. R. S. Illingworth's book is welcome evidence of interest both in child health and hygiene and in that elusive concept "normality." It now covers five years instead of three and has new sections on prevention of accidents, toys, play, the nursery school, and the sick child. Many sections have been rewritten and there has been some skilful pruning. For its abundance of information, direct and bibliographical, and for the soundness and sanity of its opinions and advice, we warmly recommend the book.

Advances in Radiobiology (Edinburgh: Oliver & Boyd. 1957. Pp. 493. 77*s*. 6*d*.).—The 5th International Congress of Radiobiology was held in Stockholm in August, 1956. The proceedings, edited by Prof. G. C. de Hevesy, Dr. A. G. Forssberg, and Dr. J. D. Abbatt, deal with the chemical, cytological, systemic, and genetic influences of radiation, with sections on the time factor and the distribution of isotopes in tissues.

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1. *Brit. med. J.*, 1955 *2*, 960.

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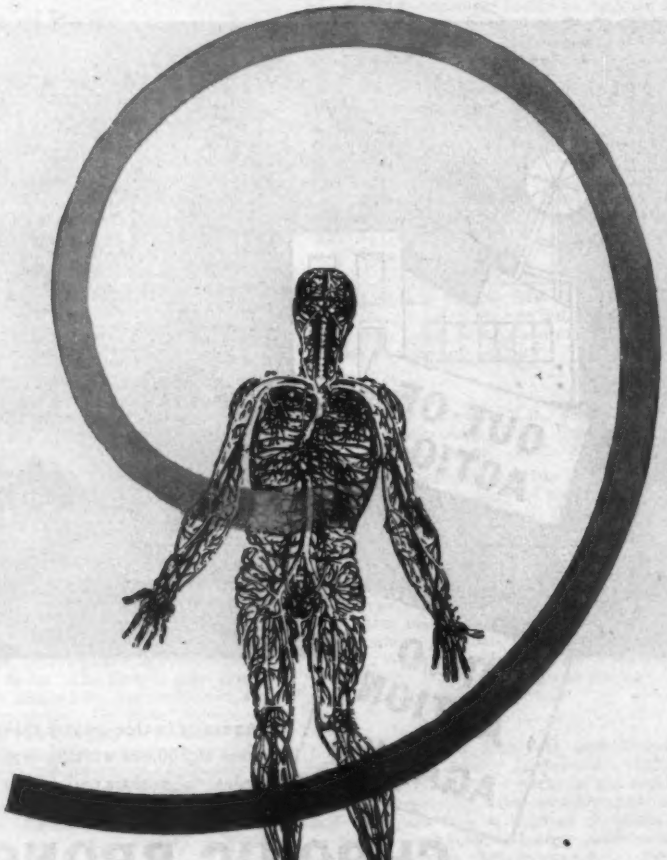

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THE LANCET

LONDON: SATURDAY, OCT. 5, 1957

Estimation of Plasma-prothrombin

THE first test for estimating plasma-prothrombin activity devised by QUICK, was the "one-stage plasma-prothrombin time." This was based on the idea that in the first stage of blood-clotting prothrombin in the presence of calcium and thromboplastin was converted to thrombin. Consequently, when an excess of a potent thromboplastin reagent and an optimal amount of calcium was added to oxalated or citrated plasma, the rate of thrombin formation, measured by the clotting-time of the mixture, was a function of the concentration of plasma-prothrombin. QUICK showed how to prepare a standardisable thromboplastin from rabbit brain, and he defined the conditions under which the test would give reliable and consistent results. Later, two accessory factors were discovered which influence this first clotting reaction: they are known as factor V (QUICK's labile factor) and factor VII (stable factor); and insufficiency of either of these factors slows the formation of thrombin from prothrombin. It was also found that the thromboplastin prepared from rabbit brain did not contain these factors; so the prothrombin-time could be prolonged by lack of one or all of these factors. If therefore the aim of testing is to determine the missing factor or factors in the blood of a patient with a congenital defect of blood-coagulation, further tests have to be made to establish which of the three possible factors is lacking and prolonging the one-stage prothrombin-time. But most prothrombin-time tests are done nowadays to control the dose of anticoagulant in patients who are receiving anticoagulant treatment for coronary thrombosis or some other thrombo-embolic condition. This form of treatment is now so widespread that all pathological laboratories are expected to be able to carry out these tests daily, and it is important that the results should be reliable and expressed so that the physician has a clear indication about the effectiveness of his treatment, and whether safe limits are being exceeded. It is unfortunate that multiplicity both of techniques and of methods of recording results has led to confusion that may be dangerous. But there is a large measure of agreement on the best methods.

We now know that anticoagulants such as dicoumarol and phenindione depress not only prothrombin but also factor-VII activity; and liability to hæmorrhage from excessive anticoagulant therapy has been found to depend on the sum of the effect of prothrombin and factor-VII depression rather than on the effect of either singly. The one-stage prothrombin-time measures this effect very well, and most workers now agree that more elaborate techniques are, as BROWN [1] puts it, "more troublesome and time-consuming without providing any practical advantage." Indeed there is some evidence [2] that the so-called two-stage techniques for estimating prothrombin activity indicate the likelihood of hæmorrhagic complications of anticoagulant treatment less reliably than the simpler one-stage method. The one-stage method therefore remains the standard technique for estimating prothrombin activity in the control of anticoagulant treatment. QUICK has always insisted, and most subsequent workers agree, that it is essential to keep the details of the technique constant, and to see that all glassware is clean, that the reactions are carried out in constant-temperature baths, and that all reagents (especially the brain-thromboplastin) are properly prepared. QUICK himself [3] uses as an anticoagulant 0·1*M* sodium oxalate in the proportion of 1 part to 9 parts of blood; he likes 0·01*M* calcium chloride, and prepares his thromboplastin from rabbit-brain. Siliconed glassware is not necessary for the test; and the estimation should be carried out not less than four hours after withdrawal of the blood. Some workers have varied this scheme slightly; DACIE,[4] for example, prefers a dried mixture of potassium and ammonium oxalates or 3·8% sodium citrate as anticoagulant; he uses 0·025*M* calcium chloride, and a thromboplastin prepared from human brain. But any other sort of variation upsets the reliability of the test. Some workers have used Russell's viper venom as a thromboplastin; this is generally agreed to give misleading, and possibly dangerously wrong, results. OWREN [5] has elaborated the one-stage technique by adding excess of factors V and VII; this seems of doubtful value since for control of anticoagulant treatment any depression of factor VII needs to be included in the estimation; STEFANINI and DAMESHEK [6] come to the conclusion that these methods have no advantage over the Quick test. Others have used diluted plasma for the test and multiplied the observed activity by an appropriate factor; here again STEFANINI and DAMESHEK say that these methods "offer no theoretical and few practical advantages."

The results of the test have to be related in some way to the normal; this is because the plasma-prothrombin time varies with the activity of the thromboplastic material used. With good brain preparations made according to QUICK's directions, the normal prothrombin-time should be about 12 seconds; but commercial preparations, on which smaller laboratories have to rely, are rarely so active and may give a time for normal plasma of 17 or even 20 seconds—figures which would be pathological with a Quick preparation. Three methods of expressing the result of the prothrombin estimation have been proposed.

In the *first method*, which is the simplest, the prothrombin-time of normal plasma with the reagents used is always reported along with the result of the patient's plasma; the aim is to maintain a ratio that shows that effective treatment is being given and at the same time assures safety. Thus, if the patient's plasma-prothrombin time is 24 seconds and the normal 12 seconds, the ratio is 2·0. BIGGS and MACFARLANE [7]

1. Brown, A. *In* Modern Trends in Blood Diseases. Edited by J. F. Wilkinson. London, 1955; p. 270.
2. Olwin, J. H. *J. Lab. clin. Med.* 1949, **34**, 806.
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5. Owren, P. *Scand. J. clin. lab. Invest.* 1949, **1**, 81.
6. Stefanini, M., Dameshek, W. The Hemorrhagic Disorders. New York, 1955.
7. Biggs, R., Macfarlane, R. G. Human Blood Coagulation. Oxford, 1957; p. 334.

recommend a therapeutic range of ratios between 1·5 and 2·5 and set the danger level at a ratio of 3.

In the *second method* a dilution curve is prepared by diluting normal plasma with saline solution in various proportions and recording the clotting-times of the diluted samples. This gives a hyperbolic curve from which "percentage prothrombin activity" corresponding to the observed prothrombin-time can be read off; thus a plasma-prothrombin time of 21 seconds corresponds to a prothrombin activity of 25%, and a time of 18 seconds to 35%, and so on. For safe therapeutic control, levels between 10% and 20% are aimed at. This method has been widely used, but there are difficulties about it. The curves relating clotting-time to prothrombin activity need to be checked frequently. Some workers, including QUICK, dilute the plasma with saline; others, including STEFANINI and DAMESHEK, consider that the normal plasma must be diluted with plasma from which prothrombin and factor VII have been absorbed with calcium phosphate leaving the other factors intact. Another disadvantage is that the shape of the curve means that reduction in prothrombin activity has relatively little effect on the clotting-time until the level falls below about 30%; but after this point a second or so difference in the clotting-time corresponds to a large reduction of prothrombin activity, and the method of observing the end-point hardly allows accuracy of this degree.

The *third method* is to express the result as a "prothrombin index." This index is the normal plasma-prothrombin time divided by the patient's prothrombin-time, multiplied by 100: desirable therapeutic levels are between 40% and 50%.

It is not surprising that there has been confusion between the results of the dilution-curve method and the prothrombin index, since both are expressed as "per cent"; and the confusion may be dangerous since 20% is a proper therapeutic result with the dilution-curve method, but indicates grave liability to hæmorrhage with the prothrombin-index method. BIGGS and MACFARLANE now recommend the first method of setting a ratio as the least ambiguous, and it is the simplest to work out and use. In view of possible confusion it is clear that the method used should be agreed between the laboratory and the physician and should be clearly indicated. This is particularly necessary when a technician is in day-to-day charge of a laboratory. If laboratory control is efficiently maintained, hæmorrhagic complications of anticoagulant treatment will be very rare and the physician can use this treatment with confidence.

Treatment of Parotid Tumours

PAROTIDECTOMY is replacing enucleation as the standard treatment of parotid tumours—partly because of belated recognition of the frequency of infiltrating types which cannot be removed by enucleation, and partly because of the high recurrence-rate in mixed tumours treated by enucleation. In the 1940s three surgeons were, independently, pioneers in the establishment of parotidectomy as a routine treatment for parotid tumours—JANES [1] of Toronto, HAMILTON BAILEY [2] here, and REDON [3] of Paris. JANES had preserved an almost complete silence from the time of his original contributions, and his many admirers in this country will therefore be very glad that he took advantage of a recent visit to this country, as visiting professor of surgery to the Middlesex Hospital, to express his views in a Moynihan lecture at the Royal College of Surgeons of England.[4]

Professor JANES gave two examples of a feature, common in parotid tumours, which vitiates many studies of results—namely, the long interval between primary operation and recurrence. In the cases he cited, the intervals were twenty years and twenty-nine years. He disagrees with REDON on the causes of recurrence. He believes that the causes are an inadequate primary operation and implantation of tumour cells; he does not believe that the cause is that any considerable proportion of tumours are multicentric. He noted that a high proportion of parotid tumours are malignant—110 out of 333 in a survey at the Toronto General Hospital. "Failure to realise the very high recurrence rate following simple enucleation of benign tumours and the general belief that very few of these tumours were malignant led to complacency." In view of present knowledge, "it seems extraordinary that enucleation with or without radiation continues to be done." He described his technique of parotidectomy, which differs only slightly from that which he originally described in 1940. Identification of the main trunk of the facial nerve is an essential preliminary. Biopsy is done, if at all, only at operation—partly because it is often difficult to make a diagnosis from small bits of tissue, partly because of the danger that "multiple recurrences are due to seeding of the wound through rupture of the tumour capsule." "If the nerve is actually going into the tumour the condition is almost certainly malignant and the fibres or if necessary a major trunk should be sacrificed." Some surgeons may be a little reluctant to accept JANES's further conclusion that "in operating upon primary benign tumours, removal of the tumour with an intact capsule and a few millimetres of surrounding normal parotid tissue is adequate"; for not only is it difficult to say for certain that any given tumour is benign, but also in inexperienced hands a limited local excision of this type will only nominally be anything more than the old enucleations. This danger will not exist in Professor JANES's hands, but that it probably does in other hands is suggested by the fact that 35 patients in the Toronto survey are said to have had "wide local excision without identification of the facial nerve." Local excisions without identification of the facial nerve do not tend to be very wide, and in fact there were 3 recurrences in this group. Of 25 in the same survey treated by superficial lobectomy or total parotidectomy and followed up, none have had recurrences. The French figures point in the same direction. REDON and BELCOUR [5] report only 1 known recurrence following 127 total parotidectomies for mixed tumour, and moreover, of 27 patients treated by conservative parotidectomy for cancer, 11 have survived for five to eleven years. MOYSE [6] found no case of recurrence in 50 primary mixed tumours treated by total conservative parotidectomy (i.e., conserving the facial nerve). Thus the case for routine superficial lobectomy as a minimum in parotid tumours is strong.

Workers in this country will agree with Professor JANES that carcinoma that has reached the stage of

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2. Bailey, H. *Brit. J. Surg.* 1941, **28**, 337.
3. Redon, H. *Proc. R. Soc. Med.* 1953, **46**, 1013; Chirurgie des glandes salivaires. Paris, 1955.
4. Janes, R. M. *Ann. R. Coll. Surg. Engl.* 1957, **21**, 1.
5. Redon, H., Belcour, J. *Mém. Acad. Chir.* 1955, **81**, 991.
6. Moyse, P. *Ibid.* p. 999.

clinical diagnosis has a very bad prognosis. On the other hand, there is great hope in the fact that so many carcinomas supervene on tumours which have been inactive for many years. Operation in this inactive phase should cure the disease. Professor JANES's main message is that all tumours of the parotid should be radically treated when first detected.

Apoplexy of Youth

YOUNG adults who die after intracranial hæmorrhage are usually found at necropsy to have an aneurysm of the circle of Willis or of a main cerebral artery. Of those who survive some are not shown to have a vascular abnormality, though presumably this is present in most cases. But sometimes no cause can be found even at necropsy. When neoplasm, obvious trauma, blood dyscrasias, hypotension, eclampsia, and polyarteritis nodosa are excluded, there remains quite a large number arising in apparently healthy young persons with no obvious vascular lesions. For a long time it was thought that the late effects of trauma were responsible; but angiography has yielded some evidence that "spontaneous" intracerebral hæmorrhages may be caused by a small angioma. BAGLEY [1] showed that such an angioma may be demonstrable only by microscopic examination; his work has been confirmed [2] and there has been a tendency to attribute *every* such case to a cryptic hæmangioma. To explain the fact that in some cases, even on the most careful examination, no angioma is detectable, it has been suggested that the tiny vascular abnormality is destroyed by the hæmorrhage itself.

Whatever the ætiology of the condition, its natural history has become clear in the light of recent studies. A previously healthy young person of either sex is suddenly seized unaccountably with headache. Consciousness may be lost immediately, but usually the symptoms progress slowly. The patient begins to vomit, and over a period of hours or days paralysis develops in part or the whole of one side of the body, with drowsiness, stupor, or even coma. Some patients die more or less at once in coma, but a substantial proportion (a third to a half) survive, either presenting the picture of a rather rapidly expanding cerebral tumour or recovering spontaneously with some residual defect. In the subacute and chronic cases there is usually some focal disturbance—hemiparesis, dysphasia, sensory impairment of cerebral type, or visual defect—and the cerebrospinal-fluid (C.S.F.) pressure in the early stages may be elevated, sometimes grossly. Focal fits, neck stiffness, a positive Kernig's sign, or other evidence of meningeal irritation, or blood-stained C.S.F., may confirm the diagnosis, but all these signs may be absent. Angiography is often negative; but sometimes a dilated vein arouses suspicion of the presence of a pathological arteriovenous shunt.[3] Rapid serial angiography may be more helpful in revealing small angiomas.[4] A gas ventriculogram shows, in about half the cases, a cavity communicating with the lateral ventricle.[5] Electro-encephalography usually reveals such widespread abnormality that localisation is possible only to one side or the other. If the patient dies a recent clot of blood is discovered in one or other hemisphere or in the cerebellum.[1 6]

It is not yet settled whether trauma plays a part in this condition or whether there is a vascular lesion which gives rise to rupture. It has been suggested that an arteriovenous shunt can give rise to a hæmorrhage from the venous side, because the pressure there is so far above the ordinary venous pressure; but it is hard to believe that such a hæmorrhage could completely destroy the arterial end of the angioma and eliminate all traces of its presence. About half the patients give a history of some trauma to the head—quite often trivial. The various hypotheses connecting the condition with trauma should not be too summarily dismissed.[7] Believing that necrotic softening of cerebral tissue led ultimately to hæmorrhage,[8] SYMONDS held similarly that an original blood-cyst caused by injury could later have a secondary hæmorrhage into it. It has often been suggested that angiospasm might be severe enough to damage the distal vascular wall, with hæmorrhage after the spasm passed off.[9] This all seems rather unlikely if all otherwise-unexplained hæmatomas are to be accounted for uniformly. On the other hand, it is difficult to identify *any* normal structures in the close vicinity of an ante-mortem hæmorrhage; so it is perhaps not strange that only some of these tiny hæmangiomas should be identified.

Treatment fortunately does not depend on a final decision on cause. An intracerebral clot was first evacuated by CUSHING in 1903 [10]; and spontaneous hæmatoma in a young person was first treated surgically by PENFIELD in 1933.[11] The modern era of surgical treatment of the condition started with CRAIG and ADSON's report in 1936.[12] Some patients soon die: these often have deeply placed vascular abnormalities, usually near the midline.[13] Others run a subacute course. If the hæmatoma is suitably placed, the quickest and most satisfactory way of dealing with it is by full craniotomy; the hæmatoma is sucked out under direct vision, the walls are examined, and any abnormality (often none is seen) is coagulated or removed. Where a high-pressure hæmatoma is in a situation where operation might cause further detriment to speech or to some other important cerebral function, or where the pressure is obviously not dangerously high, rapid and complete resolution may follow tapping of the collection of blood, through a burr-hole by means of an ordinary brain cannula. In the more chronic cases, the hæmatomas are presumably at or near normal venous pressure, and they often resolve spontaneously—presumably with the development of a typical golden collection. There may be small repeated hæmorrhages,[12] but true recurrence of the hæmatoma has not been recorded.

No-one is likely to see a very large number of these cases; so it is all the more important that the condition be widely known. For appropriate treatment may save the patient's life.

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4. Curtis, J. B. *J. Neurol. Psychiat.* 1949, **12**, 167.
5. Werner, A. *Ibid*, 1954, **17**, 57.
6. Pilcher, C. *Arch. Neurol. Psychiat., Chicago*, 1941, **46**, 416.
7. Bollinger, O. Uber traumatische Spätapoplexie. *In* Internat. Beiträge zur wiss. Med. Festschrift Rud. Virchow. Berlin, 1891.
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Annotations

A COMMON-COLD VACCINE?

RESEARCH on the common cold is full of ups and downs: the latest up is Dr. Winston H. Price's report [1] that favourable results have followed the use of a vaccine against one type of virus causing mild respiratory illness resembling the common cold.

The common cold is probably caused by different varieties of virus, but much remains uncertain because lack of a laboratory method for their cultivation has greatly impeded progress. Much interest was aroused, therefore, when two groups of workers announced independently that they had grown a new virus from people with mild upper-respiratory infections.[2 3] Pelon and Mogabgab [2] reported briefly on the recovery of the new virus and subsequently they described [4] the isolation of a number of virus strains from United States naval recruits suffering from a mild respiratory illness. The illness normally lasted two to five days, fever was low or absent, and the recruits had coryza, a mild sore throat, and malaise. Meanwhile Price [3] had independently isolated the same viral agent from two large outbreaks of respiratory disease and from patients in the Johns Hopkins Hospital and Baltimore City Hospitals; the clinical features were similar to those among the naval recruits. The virus was propagated in monkey-kidney tissue-culture and it was shown to be antigenically unrelated to previously known viruses. People from whom the virus was recovered developed neutralising antibody during convalescence, and about 20% of healthy individuals over eight years of age had neutralising antibody in their serum.[3] There is thus presumptive evidence that this virus causes an illness like the common cold, but the proportion of colds which it causes is not known. Price is reported [1] to have said that the virus was responsible for 30% of the colds he had investigated, and it is important to find whether he was dealing with a localised area of infection or whether this figure is close to the incidence of colds elsewhere in the United States and in other countries. The virus was called prototype no. 2060 by Pelon and Mogabgab and JH (for Johns Hopkins) by Price.

There have been many previous reports that the common-cold virus has been grown in the laboratory, the most promising among the recent ones being that from the common-cold research unit at Salisbury.[5] But for some reason not yet understood laboratory investigations with these viruses tend to give variable results. The JH virus is of more than ordinary interest, however, because Price has prepared some vaccine with it and finds that it apparently had a significant protective action during a small outbreak of respiratory disease. The virus was grown in monkey-kidney tissue-culture, and similar uninoculated cultures were used to prepare control materials. After the virus was inactivated with formaldehyde, groups of 100 children were inoculated with vaccine or control. Within each group, vaccine or control was allocated at random, and the persons who examined the groups did not know which children had received vaccine or control. A number of groups were vaccinated, but the results with only one group are described, since only that group experienced a respiratory outbreak associated with the JH virus. It is not stated whether respiratory outbreaks associated with other viruses, or outbreaks of unknown cause, occurred among the other groups.

There were 100 children between the ages of ten and fourteen in the group with the JH outbreak. All the children lived and slept in one large "cottage" and there was no separation of vaccinated from control children within the cottage. 50 children received two intramuscular injections of vaccine with an interval of one month between injections, 25 children were given two injections of control, and 25 had two injections of saline. The respiratory outbreak began five weeks after the second injection and it lasted about two weeks, most of the cases arising at the beginning of the second week. The affected children had coryza, mild sore throat, low-grade fever, and sometimes a cough. Tests to determine the cause were negative for streptococci, influenza, coxsackie, and adenoviruses; but 2 out of 11 patients had JH virus in their nasal washings and 20 out of 26 had significant antibody rises to JH virus. The virus is not easy to grow by present methods, and the small number of virus isolations was not considered incompatible with the outbreak having been caused by JH virus. Only 3 out of the 50 children who received vaccine became ill, compared with 12 out of 25 given control and 11 out of 25 who had saline inoculations. At first sight, therefore, the attack-rate seems to have been reduced almost eightfold by the vaccine.

It does not require great epidemiological experience to appreciate that under everyday conditions immunity to the common cold does not last very long. The important experiments made by the Commission on Acute Respiratory Diseases [6] in 1947 established that individuals infected with washings from persons with common colds could be reinfected three weeks later with the same material. This finding suggests that the immunological approach to the prevention of common colds by the preparation of polyvalent vaccines is not likely to be fruitful in the present state of knowledge. The value of Price's work is that the vaccine may provide an additional tool for finding out more about the common cold; and nothing is to be gained (indeed, a great deal of harm may be done) if premature claims are made about successful common-cold vaccines.

VISITING SCIENTISTS

DURING the war many scientists from all over the world visited this country. Their British colleagues were anxious to help, but they came at a time when private hospitality, especially in London, was often hindered by such temporary limitations as the blitz, the blackout, and rationing. To meet these war-time difficulties the Society for Visiting Scientists was formed, under the joint presidency of the president of the Royal Society and the chairman of the British Council, to provide a centre in London where scientists from overseas would find a congenial meeting-place and a welcome from their colleagues.

The society's pleasant house at 5, Old Burlington Street, W.1, was opened in 1944, and like so many sensible war-time improvisations it has continued through twelve strenuous years of peace. It offers its guests a refectory, a library, a bar, and an information service; and it has a very few bedrooms. Within this modest material framework it also offers, to visitors and hosts alike, the opportunity for stimulating discussions and informal contacts, and it has held receptions in honour of groups of visitors from abroad and meetings on varied subjects of general scientific interest ranging from meteors to tissue transplantation.

The success of this side of the society's work encouraged the hope that in easier times it would expand. Instead, carking financial cares have curtailed it and indeed threaten the existence of the society itself. Though it now has nearly 2700 members from 64 countries, it

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still has an annual income of only about £5000, made up of subscriptions from home members, donations from industry and friends, and a grant from the British Council. Overseas members pay for their accommodation and meals, but all other expenses have to be met from this rather exiguous income. Thrift and cheeseparing often allow a young enterprise to find its feet or help an older one over some emergency; but in the long run hand-to-mouth living is harmful. The society feels that if it is to serve its home and overseas members adequately it must now have an assured income of £10,000 a year, and it is asking for further support. Many doctors return from abroad full of gratitude for the hospitality and kindness which they have received. A donation, sent to the society's treasurer, Prof. Alexander Haddow, would be an easy and practical way of returning thanks.

VIRUS INFECTIONS OF THE EYE

PRIMARY virus infections of the eye include trachoma, which still affects tens of millions of people, epidemic keratoconjunctivitis, and inclusion blenorrhœa, which bears kinship to trachoma but is comparatively mild, easily treated, and becoming less common. Conjunctivitis or keratitis may also occur in such infections as zoster, varicella, measles, Newcastle disease, and lymphogranuloma venereum, but many Western clinicians find that the infections of greatest visual and economic importance are caused by the virus of herpes simplex. Primary herpetic infection in children may cause severe keratoconjunctivitis, but in adults involvement of the cornea is almost the rule. Dendriditic keratitis is the typical lesion, but there are several superficial and deep manifestations of which hypopyon ulcer is one of the most important and least well understood. The topical use of corticosteroid hormones is thought to be deleterious in treating herpetic eye infections, and it may[1] possibly be responsible for the increased incidence of complications in recent years. Whether such treatment acts by increasing virus proliferation or tissue susceptibility is not known, but Kimura and Okumoto[2] have shown that experimental herpetic infection in rabbits is made worse by administration of such steroids and that fatal encephalitis may ensue. Hogan[3] claims that certain types of severe recurrent herpetic infection of the human cornea are best treated by transplantations, although he was unable to isolate herpes virus from two grafts removed at keratoplasty. The nature of the symbiotic relation of herpes virus to the corneal or other tissue cells is still a mystery, and we must be sure that the virus does not stray outside the corneal territory before feeling confident that surgical methods of treatment will ensure freedom from further attack.

The other indigenous virus infection of the eyes—epidemic keratoconjunctivitis (E.K.C.)—has been known in the Far East since 1889 but was recognised in the United States only in 1941 when it soon became a threat to industry. Since then there have been many explosive outbreaks on both sides of the Atlantic. It is now believed to be caused by one or more of the adenoviruses which are responsible for several clinically distinguishable infections of the upper respiratory tract and eye. In an article on p. 670 of this issue Dr. Bennett and her colleagues in Aberdeen described how E.K.C. begins as a follicular conjunctivitis, which is followed some ten days later by the appearance of round subepithelial corneal opacities or infiltrates. These changes are more severe and persistent than in pharyngoconjunctival fever (P.C.F.), which in any case can be distinguished by systemic symptoms. In P.C.F. the infiltrates are very small and epithelial rather than subepithelial, and appear along with the conjunctivitis. P.C.F. is a disease of children, whereas E.K.C. mainly attacks adults. Swimming-pool transmission of P.C.F. is common in the United States, whereas E.K.C., a much more contagious condition, is not spread in this way but is a particular menace in hospital and eye-clinic. Leopold[4] and others leave us in little doubt that contaminated eye-droppers, tonometers, and ophthalmoscopes readily spread the disease. Ophthalmologists seem to infect themselves with surprising ease, presumably because like the rest of us they rub their eyes with contaminated fingers; and certainly trauma cannot be an essential predisposing factor. Fortunately one attack of infection produces immunity, for there are no records of second attacks either of E.K.C. or of P.C.F.

The keratitis which follows infection with types 3 and 7 adenovirus seems to be slight and short-lived and is clinically distinguishable from true E.K.C. Type-8 adenovirus, according to Thygeson and Jawetz,[5] has been isolated from the eye only three times, and it is perhaps significant that in the five successful isolations by the Aberdeen workers tissue-cultures of human embryonic kidney were used after HeLa cells had failed. Type-8 virus is biologically different from the other adenoviruses and it has seldom been isolated from sources other than the eye. Serological evidence for the association of type 8 with E.K.C. is fairly good: of 70 clinical cases mentioned by Thygeson and Jawetz 66 had neutralising antibodies in titres of 1:10 or greater, whereas of 140 unaffected people from the same areas only 10 had such antibodies. Again of 17 paired sera from clinical cases 15 showed a fourfold or greater increase of type-8 antibody, but the titres varied considerably. Experiments in volunteers suggest that typical E.K.C. can be produced by inoculation of type-8 virus into the eyes. The results of the Aberdeen study strongly support this view of the ætiology of the disease, although these workers are careful to note the dangers of generalising about outbreaks when more than one type of virus may be concerned. Now that the Sanders virus, originally thought to cause E.K.C., has been shown to be a variant of St. Louis encephalitis virus, the way is clear for accepting type-8 adenovirus as a cause, and possibly the main cause, of true epidemic keratoconjunctivitis.

ACUTE HÆMORRHAGIC CYSTITIS

FROM time to time a patient presents with severe symptoms of acute cystitis, but the urine, although containing pus, is found on culture to contain none of the usual organisms. To such cases, when subsequent investigations have excluded the likelihood of tuberculous infection, the term "abacterial pyuria" is sometimes applied. This condition, familiar to all urologists, usually affects young men, and is characterised cystoscopically by acute hæmorrhagic congestion of the bladder mucosa. It commonly follows recent venereal exposure and may be associated with non-specific urethritis. The disease, which is often attributed to a virus infection, is typically resistant to sulphonamide therapy but may respond to arsenicals and certain antibiotics.

Berg et al.,[6] who prefer the term "acute hæmorrhagic cystitis" to abacterial pyuria, studied this disorder in cases of unexplained genito-urinary infection among United States sailors. Special culture preparations were made for the identification of the minute pleuropneumonia-like organisms (P.P.L.O.) sometimes recovered in cases of non-specific urethritis. Positive results were obtained in 57 out of 88 patients with unexplained genito-urinary infections, and in 11 of these cystoscopy confirmed the presence of acute hæmorrhagic cystitis. 3 of the 31 patients with negative urinary cultures had cystoscopic evidence of cystitis, but in several instances

1. Thygeson, P., Kimura, S. J. *Amer. J. Ophthal.* 1957, **43**, 109.
2. Kimura, S. J., Okumoto, M. *Ibid*, p. 131.
3. Hogan, M. J. *Ibid*, p. 147.
4. Leopold, I. H. *Ibid*, p. 93.
5. Thygeson, P., Jawetz, E. *Ibid*, p. 161.
6. Berg, R. L., Weinberger, H., Dienes, L. *Amer. J. Med.* 1957, **22**, 848.

investigation was incomplete. With the addition of 4 cases from other sources, in which acute hæmorrhagic cystitis was associated with the presence of P.P.L.O., the combined series was compared with a control group presumed to be free from urinary infection. Initially P.P.L.O. were found in 37% of the control group, but this figure was reduced to 22% when all patients with any trace of genito-urinary disease were excluded. Comparing this with the 65% positive cultures in the original series, Berg et al. feel that they have some justification for ascribing acute hæmorrhagic cystitis to P.P.L.O. But their arguments must be accepted with some reserve, because, firstly, it is by no means established that P.P.L.O. give rise to non-specific urethritis and the relatively high prevalence of these organisms in healthy subjects suggests that they may be commensals; secondly, the methods adopted for obtaining urinary samples in the present series did not exclude the possibility of contamination from the urethra; and thirdly, the statistical evidence presented, though plentiful, is insufficient to confirm a definite relationship between P.P.L.O. and acute hæmorrhagic cystitis. The fact, mentioned by Berg et al., that acute cystitis could not be attributed to P.P.L.O. in any woman (despite the common presence of these organisms in the vulva) seems also to call for explanation.

THE CONNECTIVE-TISSUE SYSTEM

THOSE working on rheumatic diseases have long realised that significant advances in the understanding of their nature and in their treatment must depend on improved knowledge of the structure and functions of the connective tissues. Basic research into these subjects is now being prosecuted throughout the world; and Professor Tunbridge, of Leeds, has reviewed this work.[1]

It is not surprising that the vast experience of the workers in textile-fibre research, for which Leeds University is renowned, should have been canalised into the study of the fibres of the connective tissue, or that the department of medicine there should be making fundamental observations on the structure of collagen and elastin fibres and their mutual relationship. Tunbridge's own work on the connective-tissue system arose from his interest in senile purpura, in which the dermis of the exposed parts shows an apparent excess of the elastin over the collagen fibres. Electron microscopy of such areas [2] before and after various enzymatic treatments led to the conclusion that the affinity of the affected dermis for the usual elastin stains was misleading and that the material was in fact collagen in various stages of degeneration. Very few would dissent from this conclusion, but subsequent work by Tunbridge and his colleagues [3] has suggested an alternative explanation which has excited considerable controversy. They suggest that elastin is itself a derivative of collagen and that appropriate treatment of collagen in vitro leads to the production of a material that is virtually identical with elastin.

Two main arguments may be advanced against this hypothesis. Firstly, the amino-acid composition of collagen [4] and elastin,[5 6] both of which are known with a great degree of accuracy, are so different that it seems impossible that one could be converted to the other. Secondly, whilst the electron-microscopic picture of collagen is remarkably characteristic, that of elastin, at least to the uninitiated, is remarkable for its lack of precise characteristics. Hence, it would appear easy to fall into the error of mistaking the loss of the characteristics of collagen for a transformation into elastin. But it must be conceded that the Leeds workers maintain that the electron-microscopic appearance of elastin is by no means characterless, and that appropriately treated collagen can be seen to acquire characters, though these are admittedly esoteric. With regard to the differences in amino-acid composition, here too the discrepancies may not be quite as great as they seem. At present the most widely held view of the structure of the collagen molecule is that it is composed of a coiled coil of three peptide chains.[7] If these chains differ in their amino-acid make-up it is conceivable that, for example, the bulk of hydroxyproline is concentrated in one or two of the three component peptide chains, the removal of which would leave a residue with the low hydroxyproline content found in elastin. But even if the differences in the hydroxyproline contents of elastin and collagen could be accounted for, the other differences in amino-acids are so striking as to render the transformation chemically impossible. Only a complete amino-acid analysis of the so-called elastin could adequately support the hypothesis, but figures of such an analysis are unfortunately lacking.

It is perhaps a far cry from this controversy on collagen-elastin transformation to rheumatoid arthritis. It does, however, illustrate the profundity of our ignorance of the essentials for understanding the diseases of connective tissue, and as such is salutary.

JOURNAL OF MENTAL-DEFICIENCY RESEARCH

THE appearance of a journal devoted to research into mental deficiency [8] is welcome. The proportion of children born with or predisposed to severe mental handicap, like that of children born with congenital physical malformations, has been little if at all reduced by the public-health measures which have so successfully reduced child morbidity and mortality from infectious and nutritional disorders. Research into the causes of mental deficiency should be intensified. Three of the most striking successes hitherto—the discovery of the causes of cretinism, of kernicterus associated with erythroblastosis fœtalis, and of phenylpyruvic amentia—have each led to promising lines of treatment. These three examples from endocrinology, serology, and biochemical genetics show how wide is the field that must be covered by research on mental deficiency, and suggest the likely usefulness to workers in this field of a journal to place in focus the contributions of different disciplines.

The most striking article in the first issue is that by L. S. Penrose on the geographical distribution of anencephaly. Anencephaly may be regarded as the most extreme form of mental defect, the cerebral hemispheres being largely or entirely absent. Penrose notes the variation in incidence even within Great Britain; the incidence is higher in Birmingham than London, higher in Liverpool and Glasgow than in Birmingham, and higher still in Ireland with the maximum of 6·3 per 1000 births in Belfast. The only other high figures from Europe are from Naples and Viipuri. In contrast Central Europe has a low incidence—for example Lyon has an incidence of only 0·12 in 1000 births. This contrast is best illustrated by totals 207 anencephalics in 30,855 births in Belfast, compared with only 7 anencephalics in 59,406 births in Lyon. These data give no direct information on the causes of anencephaly. Differences in gene frequencies or in environmental factors may be concerned—probably both. The regional differences will form a starting-point for further research.

1. Tunbridge, R. E. *Ann. rheum. Dis.* 1957, **16**, 6.
2. Tunbridge, R. E., Tattersall, R. N., Hall, D. A., Astbury, W. T., Reed, R. *Clin. Sci.* 1952, **11**, 315.
3. Burton, D., Hall, D. A., Keech, M. K., Reed, R., Saxl, H., Tunbridge, R. E., Wood, J. J. *Nature, Lond.* 1955, **176**, 966.
4. Bowes, J. H., Kenten, R. H. *Biochem. J.* 1948, **43**, 358.
5. Partridge, S. M., Davis, H. F. *Ibid*, 1955, **61**, 21.
6. Partridge, S. M., Davis, H. F., Adair, G. S. *Ibid*, p. 11.
7. Rich, A., Crick, F. H. C. *Nature, Lond.* 1955, **176**, 915.
8. *Journal of Mental Deficiency Research.* Editor: Dr. B. W. Richards, St. Lawrence's Hospital, Caterham, Surrey. Subscriptions (7*s.* 6*d.* for first issue, 15*s.* for first two issues) should be sent to Mr. A. Highfield, 10, Shenden Way, Sevenoaks, Kent.

Public Health

HEALTH VISITOR AND FAMILY DOCTOR

AN EXERCISE IN LIAISON

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THE National Health Service Act of 1946 gave the health visitor opportunities to extend her duties beyond the range of maternity and child welfare. To enable her to do so, however, it was clearly important that the general practitioner should accept her as a member of his domiciliary team. This, it was realised, would not come automatically; barriers of hostility and prejudice—which in the past had formed obstacles to coöperation—must be broken down; indeed, the very fact that the Act which gave the health visitor more scope at the same time provided a free medical service for all tended to make them more formidable. These forecasts proved to have some foundation, and it soon became apparent that the task of improving collaboration was not going to be easy.

First Steps

The first approach to family doctors was on general lines. Information about the scope of work of the health visitor, and suggestions on the ways in which she might assist the practitioner, were made known by letter, by personal approach and talks, and through the medium of the "open day" at the maternity and child-welfare centres. The response was not very encouraging, and the reluctance to accept the health visitor was not easily overcome, but a number of doctors gradually adopted a more friendly spirit. The publication of the report of the British Medical Association committee on health visiting did much to encourage this, and considerable progress has since been made.

In 1952, a few doctors in this area were asked if they would allow a health visitor to call at their surgeries at certain times each week; it was suggested that they might discuss with her patients of medicosocial interest, which, if necessary, she would visit. As in the case of other practitioners, they could, of course, get in touch with her at the welfare centre at other times as necessary. These experiments met with a good deal of success, and the opinion was expressed that health visitors could play a useful part in the work of the practice—especially in the care of the aged.

It was felt, therefore, that there would be special advantages in attaching a health visitor to a group practice, particularly if the doctors were undertaking antenatal and child-welfare work themselves. In 1953, therefore, an approach was made to a group of four doctors in partnership, and it was suggested that for an experimental period they should use the services of a health visitor who would be seconded to the practice for five sessions a week. It was envisaged that midwives too would attend the antenatal clinic held at the surgery. This offer was accepted with alacrity.

The Group Practice

(M. F.)

The premises taken over in 1946 were small, consisting of the old-fashioned shop-front and half-painted window, a waiting-room to seat 17 patients on chairs and forms, a tiny dispensary, and a consulting-room. There was only gas lighting and no running water. Although electricity was installed and running water laid on with an 'Ascot' heater, we felt that the limitations of the premises were such that a move was essential. Eventually architect-designed and purpose-built premises were occupied in July, 1950, and now form the group-practice premises. The accommodation, under one roof, consists of a large waiting-room, general office, three consulting-rooms, and patients' lavatories.

By the early part of 1953, we had introduced an appointment system which was working reasonably well and allowed the load to be spread more evenly over the surgeries. Patients welcomed the change from long waits. In the organisation of our work we felt the need to have the opinion of the "consumer," and a patients' committee was set up. Some 20 volunteers were found, to whom the objects were explained, and this led to the formation of the Patients' Welfare Association, with its own elected committee. We considered that health education, in the form of lectures, demonstrations, &c., would be much more successful if organised by the Association. It has been established some three years, but we believe that it will take some five years to achieve what we have in mind. In the meantime there has been much social activity, such as whist drives and christmas parties.

The Part played by the Health Visitor

About this time the suggestion was made that a health visitor might be attached to the practice. The idea was novel, and the offer was accepted as a wonderful opportunity to improve the comprehensiveness of the service already given. After discussion with the divisional staff, it was decided that the health visitor should attend primarily to make early contact at home and at the surgery with the mothers whom she would be visiting after delivery, and in addition she would visit patients for whom hospital confinement on social grounds had been recommended.

Although the area covered by the practice was larger than the health visitors' district, it was arranged, despite difficulties, that the health visitor should be responsible for all the patients wherever they lived. Mothercraft classes were begun by the health visitor but they were reluctantly abandoned—not because of lack of patients but because the consulting-rooms were much too small for the purpose; the waiting-room was big enough but we could not give the necessary privacy because the premises were open all day from 8.30 A.M. to 7 P.M. The classes, therefore, had to be conducted at a nearby county welfare centre.

We started our own baby clinic in October, 1953, with one doctor and the health visitor in attendance. The numbers grew rapidly, and it was found that the weighing of the babies and entering the weights on both the mother's book and the baby-clinic chart was taking up much valuable time. The Patients' Welfare Association set up a rota of volunteers, two attending each clinic and taking charge of weighing, &c. This left the doctor and health visitor free to discuss problems with the mothers. All babies are seen by either the doctor or the health visitor indiscriminately, but any special problems are dealt with by the doctor at the request of the health visitor or the patient. All babies are fully examined by the doctor at their first attendance.

Vaccination and diphtheria and whooping-cough immunisation are available at the clinic; the proportion of babies immunised is almost 100%.

The numbers attending rose from 53 in October, 1953, to 241 in October, 1956, with an annual total of 1556 for 1953 and an estimated total of more than 3000 for 1957. We decided that these numbers warranted an additional pair of hands, and about a year ago another member of the group began to attend the clinic, mainly to do the vaccinations and immunisations, but seeing a number of the babies as a routine. The babies attend regularly until they are 18 months old; then they are transferred to the toddlers' clinic, which is held on another day. A birthday book is kept, and on the 2nd,

3rd, and 4th birthdays children are sent an appointment to attend for a routine check. This clinic is attended by a doctor and the health visitor. The toddlers are weighed, measured, and medically examined. A reinforcing dose of diphtheria and whooping-cough antigens is usually given.

The health visitor spends a good deal of her time visiting children; new births (2 or 3 weekly), 0–1 year (12 to 15 weekly), 1–2 years (12 to 15 weekly), 2–5 years (5 to 10 weekly). She undertakes a great deal of medico-social work in connection with the aged, and her visits are supplemented by visitors who are volunteers from the Patients' Welfare Association. The health visitor cannot spare enough time for this important work. Transport difficulties are partly responsible for this, but it must be remembered that, in addition to the work of the practice, she carries out her other duties as a district health visitor.

We hold a weekly meeting in the surgery which is attended by the doctors, health visitor, and nurse/secretary. Here we discuss cases and the general organisation. These meetings are held on a basis of equality of all taking part, for we believe that this is essential to obtain a harmoniously working group.

General Observations

This background has been sketched because we believe that, on the road to the complete integration of general-practitioner and local-authority services in health centres, coöperation between the two in group practice is an important mile-post and can be achieved, given the opportunity and the desire on both sides to make it work.

I believe that the coöperation between the partnership and the local authority has been to our mutual advantage, and, what is more important, has produced a higher standard of practice. It has also enabled more emphasis to be laid on preventive medicine and the promotion of health than would otherwise have been possible in a busy practice. There have been many obstacles of administration, but most of these had been overcome by enthusiasm and good will. The fact that welfare foods could not be issued has been a matter for concern. Mothers had wondered why they could not obtain them; the request, though agreed to in principle by the Ministry, was rejected by the local medical committee. Nevertheless, one expects progress to be difficult and to meet with opposition; and just as all concerned have managed to overcome other difficulties, we believe that eventually the logic of allowing welfare foods to be distributed at this clinic, as at any other, will prevail. The experiment has proved so successful that I should welcome the services of a health visitor for the whole of her time. She would, however, need a car.

The M.O.H.'s Views

(H. D. C.)

The results of this exercise have been encouraging, and many useful lessons have been learned. Above all, it has been shown that the health visitor can fit in easily as a member of the general-practitioner team, and can make an important contribution to its efficiency. It must not be forgotten, however, that the main reason for the success of this venture was the enthusiasm shown on both sides. The doctors accepted the health visitor from the outset as one of the group; the fact that she participated in the weekly case and administration conferences is evidence of this. It has been suggested often that if health visitors were seconded to general practices there would be a danger of their becoming surgery nurses. This never happened here; indeed, the presence of a state-registered nurse/secretary made it unnecessary for her to undertake any such work.

It is possible that the scheme would have broken down early if the initial difficulties—and there were many—had not been faced in a coöperative spirit. In a large practice such as this, many of the patients come from outside the area served by the health visitor, who was performing a dual rôle, and for half the time had her own district work to perform. This problem was overcome by arrangement with the health visitors concerned. Although in many other ways the scheme would have been simplified if the health visitor had been attached full-time to the practice, in the matter of domiciliary visiting the part-time arrangement had certain advantages, particularly in respect of those patients who lived in her area.

As the work increased it was clear that she could have spent a great deal more of her time on practice work, but, although the members of the group requested it, this was impossible to arrange. One of the ways in which she could well have increased her domiciliary work was in connection with the care of older people, but for this she would have needed suitable transport.

One of the main criticisms of health visitors, and a potent cause of friction with family doctors, has been the giving of advice on such matters as infant feeding which has differed from that of the doctor. When the health visitor is part of the team, and attends the child-welfare clinic in the surgery, this cannot happen.

Whatever views are held on the secondment of health visitors to general practitioners, the fact remains that when doctors decide to hold antenatal, child-welfare, and immunisation clinics in their own premises, the attendances at local-authority clinics will diminish proportionately. It seems reasonable, therefore, to send the health visitor to the surgery, where there is work for her to do which would not otherwise come her way. Similarly, the midwife should attend the antenatal clinics, and in the present instance arrangements were made for two to visit, with very satisfactory results.

Unfortunately, owing to the shortage of health visitors, and the unnecessary work which many of them are still called on to perform, it would be difficult to multiply schemes such as this one at present. This exercise was perforce an experiment, but it is hoped that the lessons learned will prove of benefit in deciding how best the health visitor of tomorrow should be employed. There is no doubt that the closer her attachment to general practice the more rewarding will her work be, and the greater the emphasis laid on preventive medicine and medicosocial problems within the practices.

As part of the plan for integrating the work of the health visitor with general practice, schemes such as this should be encouraged by local health authorities. If group practices multiply, the demand for this sort of assistance is bound to increase. Unfortunately, the dearth of health visitors and the fact that more and more calls are being made on their services—as, for example, by the hospitals—makes it very difficult to meet it. Much can be done, however, by relieving the health visitor of many of her duties. She is basically an all-purpose visitor (and that is what the family doctor wants), and where long-term specialised work is needed on her district, such as that in connection with problem families, it may be undertaken with advantage by the specialist social worker. When this is done the health visitor will be able to play her proper part as a member of the general-practitioner domiciliary team.

Influenza

The first supplies of influenza vaccine for hospitals were issued on Tuesday; those for local health authorities will, it is hoped, be distributed next week. In hospitals, doctors and nurses are to be vaccinated; local health authorities are to offer vaccination to their own staff who may be in contact with the sick (including nurses, midwives, home-helps, and ambulance drivers), and to family doctors both inside and outside the National Health Service. The family doctors will be approached by the medical officer of health through the local medical committee, or (in agreement with the committee

directly. Two doses are needed, each of 1 ml., at an interval of three weeks. The vaccine, which will be supplied free, will keep indefinitely at 4–8°C or for a few weeks at cool temperatures; it must not be frozen.

Judged by absence from school, the epidemic seems to be subsiding in northern England, though more deaths have been reported. Thus in Manchester [1] on Monday 24,000 pupils were absent, compared with 33,000 the week before: but 15 people died last week, compared with 12 the previous week. In 1953–56 the number of deaths in the 160 great towns of England and Wales, in the five weeks ended Sept. 21, ranged from 568 to 771 for pneumonia and from 7 to 20 for influenza; this year the corresponding figures were 997 for pneumonia and 184 for influenza.

In the United States, where large-scale outbreaks have appeared in several widely scattered States, the Public Health Service has named a 14-man advisory committee.[2] Up to Sept. 27, over 5,800,000 doses of vaccine had been distributed for civilian use. The World Health Organisation said that a vaccine made from the newly isolated virus had very little antigenic potency,[3] and that tests had not been encouraging.

Welfare Orange-juice

The Minister of Health and the Secretary of State for Scotland have accepted the recommendations on the supply of extra vitamins to young children and to expectant and nursing mothers which are made in the report on welfare foods of a joint subcommittee of the Central and Scottish Standing Medical Advisory Committees, under the chairmanship of Lord Cohen of Birkenhead. One of the recommendations is that the supply of welfare orange-juice for children should cease when they reach the age of two. An amendment to the Welfare Foods Order with this effect will come into operation on Nov. 1.

1. *Manchester Guardian*, Oct. 1, 1957.
2. *New York Times*, Sept. 26, 1957.
3. *Ibid*, Sept. 28.

Poliomyelitis

Uncorrected poliomyelitis notifications in the week ending Sept. 21 were as follows (preceding week in parentheses): paralytic 113 (116), non-paralytic 85 (84); total 198 (200).

Tobacco-smoking

In his annual report for 1956 Dr. D. H. Geffen, medical officer of health for St. Pancras, expresses the opinion of himself and Dr. S. M. Tracy, his deputy, on the habit of tobacco-smoking. They suggest that the compulsion to smoke is the compulsion of a long-established habit, and one that is encouraged by advertisement, by fashion, and by the herd instinct. "We therefore consider that if a person could be placed in an environment where he was not subjected to the compulsion of smoking he might smoke less." Smoking might well be prohibited in buses, trams, and trains, and in theatres and cinemas, to the benefit of both smoker and non-smoker.

Special Articles

MAMMALIAN BEHAVIOUR STUDIES IN MEDICAL RESEARCH

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FROM time to time articles appear in the medical press on some aspects of the behaviour of mammals, which is said to throw light on mental health and disease. Such articles often suggest that work on animal behaviour is of value either in testing proposed therapeutic measures, especially the use of new drugs, or for understanding the ætiology of human mental disease. In the latter case behaviour described as "neurotic" is compared with human psychopathology.

Wrong Comparisons

From Pavlov's time onward the dramatic possibilities of objective studies of animal behaviour have been clear; yet the term "neurotic" behaviour has not been further clarified. On this point Kubie (1939) makes a pertinent remark:

> "The experimentally induced disturbances in animals are quasi-neuroses, not in any true sense identical with human neuroses, not unless we are to use this word to indicate something wholly different from that which the term means in human psychopathology, the imitation in animals of emotional states which attend neuroses in man is not the experimental production of the essence of the neurosis itself."

That the comparison between animal "neuroses" and human mental disease can only be tenuous should be clear from the simple fact that an objective description of normal behaviour, both for the animal in question and for man, is lacking. As W. A. Hunt said at the joint meeting of the Canadian and British Medical Associations in Toronto in 1955, "psychological experience and concepts are mainly derived from private practice."

The determination of what is abnormal is therefore often impossible in present circumstances, and the term "neurotic" must derive its meaning from history. A careful examination of the behaviour considered to be "neurotic" in experiments on animals reveals that a more accurate term would be "unusual"—i.e., unusual in the circumstances of the observer's experience. There is an assumption that all mammals are in general alike in their behaviour, thus lending a false reasonableness to comparisons between man's abnormal behaviour and superficially similar behaviour in other mammals.

Such an assumption is now demonstrably false. A particularly clear example is provided by the way the objective study of convulsions in animals has been impeded by the assumption that because "convulsions" are mainly pathological in man they are necessarily so in animals (Chance 1957).

It is little wonder, therefore, that there is no widespread demand for a comprehensive knowledge of mammalian behaviour, so long as such inconsistencies remain hidden. It is precisely this lack of knowledge that is acting as a brake on research in many fields ancillary to medicine.

In view of the fact that Munn (1950) published an extensive book on the behaviour of the rat it may seem strange to suggest that we do not know much about the rat's behaviour; but no attempt was made in this book to show how the system of behaviour is organised to deal with information in the proportions which would be natural to the rat. Only this type of approach gives one a clear idea of the interrelationship of the parts of an animal's behaviour. Instead the rat is used as a preparation to study selected categories of elements: learning, motivation, &c.

A few studies—e.g., Steiniger (1950) and Chitty and Southern (1954)—on wild rats provide the first suggestions of the patterns of behaviour which may be expected in this animal, but the work that is urgently needed concerns laboratory mammals, because in them the environment can be controlled to produce different results. Field studies, however, must remain the ultimate source of reference.

Objective observation of laboratory rats has already shown that unsuspected elements of behaviour are revealed by systematic study:

> Urination, for example, has three rôles in the rat, although the rat does not appear to urinate in different ways. Urina-

tion in the rat subserves territory formation, elimination of waste products, and a social activity whose function is unknown and may need studies of wild rats to define its rôle. It is therefore not difficult to see that studies of "emotionality" in rats, which are often investigated, with urination as an index, will be bedevilled by this complexity, which is not yet understood.

Defæcation is also used as an "equally good" indicator; yet, whereas urination serves all these three functions, defæcation in the rat is definitely not associated with territory formation. Therefore the indiscriminate use of these two activities as indicators of "emotion" in the rat are well-nigh meaningless.

Consequently the initiation in animals of emotional states comparable to those which attend neuroses in man is not only "not the experimental production of the essence of the neurosis" but is impossible in our present state of knowledge of mammalian behaviour.

Status and Nature of Systematic Behaviour Studies

The absence of systematic ideas of the rat's behaviour similar to that which we have for the stickleback, for example, leads (among other things) to various pieces of knowledge lying idle for many years because their relevance to immediate problems cannot be grasped by those working in related fields. Systematisation is one example of making knowledge more compact and readily conveyed without reference to innumerable papers. But this compact knowledge of an animal's behaviour can only be constructed by a series of related studies, all of which must be based upon objective description in the first instance.

The value of systematic study was shown in a very practical way during the late war, when the need to conserve grain in granaries from the predation of rats was urgent and vital. Before the war a rat-catcher working on traditional lines would perhaps, in a single visit—poison at the most 10% of the rats in the building. Now, as a result of patient observation of the rat's behaviour, as part of war policy by the Ministry of Agriculture (Chitty and Southern 1954), the catch is 95% in three visits. The first two are used for what is called pre-baiting—i.e., placing food at the site to be used for poisoning—and only on the third visit is the poison included with the food.

This procedure was developed because it was found that any change in the environment, including the appearance of new food sites in the area occupied by the rats, caused the rats to visit the food less frequently each night for several nights following the disturbance. Only gradually did the rats become used to the presence of the new food.

Originally it was thought that the rats ate only a little food from the new site as soon as it was put down; and this does happen. The rat samples the food in the first instance and as a result learns to avoid the poison bait. What was not evident, however, from the fact that new sites are visited infrequently at first, was that the success of the method depended on other factors as well. These other factors are that food is hoarded particularly rapidly in partially familiar circumstances, and that it is eaten faster in familiar surroundings. So the food taken home by some rats will be eaten avidly by others which remain at home.

We can now, therefore, say that the rat reacts to food, in unfamiliar circumstances, first by ignoring it, then exploring it, then sampling it, then (as familiarity increases) hoarding it, and finally eating it with avidity. The problem is, therefore, to get the rat to hoard the food before the poison is included. We can now predict the effect of various overall changes on the feeding behaviour in any situation and can measure these changes by the rate of feeding (Chance and Mead 1955). Moreover, it is easy, from the summary statement made above, for any relatively inexperienced person to grasp the extent to which control of this aspect of the rat's behaviour could be of use in other ways.

We note here how knowledge obtained with a practical end in view can stop short of a formulation required to make it generally available; this is also true of experiments which constitute a piecemeal investigation of a whole field. This is the stage which the behaviour studies of mammals in this country has so far reached; but a noteworthy exception is the work of Hediger (1950) on the behaviour of mammals in zoos.

Recent years have seen great advances in the study of animal behaviour, particularly in the study of innate behaviour. Such study, however, has been almost restricted to lower vertebrates and insects because their innate behaviour is more prominent. Nevertheless the essential advance has not come from the recognition of innate behaviour but from the application of scientific methods used in other fields to the study of behaviour. These methods consist simply of description of the behaviour, its analysis into parts, and the construction of a hypothesis to relate these parts, which often includes measurement of the relative intensities of the different parts of the behaviour. There is no a-priori reason why the methods should not be applied with equal success to mammals.

Regional Physiology of Nervous System

In few fields of research into the function of the nervous system is the need for a clear and precise knowledge of mammalian behaviour more urgent than in that of electrophysiological studies of the brain. If it were not that practically every electrical recording taken from the brain supplies some new fact, this would be clear. Though studies with implanted electrodes are still directed at point localisation, the evidence derived from them has already revealed the existence of diffuse anatomical systems whose function depends as much on the state of the system as on its anatomical structure.

A striking example of this is the importance of the proprioceptive inflow in controlling and altering the somatotopic map of the motor cortex. Ward (1952) finds that fixation of the limb in flexion increases the size of the contralateral cortical area eliciting extension of that limb, and vice versa for fixation in extension. This work has been confirmed by Gellhorn and Hyde (1953).

This discovery indicates that the extent of the area of the cortex organised to control the limb movements depends on the proprioceptive inflow from the limb at any one moment. Therefore the neurones on the periphery of this area will undergo an oscillation of function with repeated extension and flexion of the leg. Input pattern even modifies the function of the retinal cells, as Kuffler (1953) has shown.

This state of affairs is, however, no more than the condition which holds in all other parts of the nervous system proximal to the first nerve-junctions on the afferent pathways. At any one point and at any one time in the nervous system, therefore, the modality of neurone function may be shifting under the influence of precise afferent inputs, diffuse nervous networks and receptors responding to shifts in the chemical environment. At certain loci the number of influences may be restricted to only one of these types and perhaps to only one nervous pathway or type of receptor. It is possible to see how, in this way, "every type of localisation, from the most precise to the most diffuse, has been found in various places and under certain experimental conditions" (Sprague et al. 1955).

Precise somatotopic localisation in the thalamus of the cat was found when some thalamic neurones were activated by as little as 1 sq. cm. at the apex of the limb and others by 25 sq. cm. or more at the base of the limb (Cohen and Grundfest 1954). In contrast to this, a pattern involving part or all of the processes of mastication, eating, chewing, licking, sniffing, swallowing, and salivation was obtained by stimulating the amygdala diencephalon, as well as motor cortex (Kaada et al. 1953, Hess 1954, Rodriguez Delgado 1952).

These examples show that the organisation of locomotor behaviour is similar and equally well integrated by stimulation of widely separated parts of the central nervous system.

Yet another example of this in the unanæsthetised animal is the appearance of a locomotor progression pattern found in a wide variety of sites on electrical stimulation. The pattern consists of circling to one side or the other (leading to rage and flight in some cases, but usually followed by curling up and sleeping in others). This pattern can be produced by stimulating the prefrontal cortex, the anterior cingulate and hippocampal gyri, the hippocampus and the amygdala, the hypothalamus, the mesencephalic tegmentum, the pontobulbar reticular formation, and the cerebellum.

In contrast to the sites in the hypothalamus, electrical stimulation of which reveals discrete areas responsible for the major motivations (hunger, thirst, &c.), the examples cited above show how different elements can be elicited by stimulation of widely separated parts of the nervous system. One possible interpretation could be that these components of behaviour are required in association with many different activities mediated or initiated by these widely different parts. The types of behaviour are, however, not especially likely to be required in many activities; so this explanation is inadequate.

It is perhaps pertinent here to note the remarks of Sprague et al. (1955):

"Concepts of localisation of function are most difficult to apply to the results of behavioural functions as they are measured today (intelligence, perception, emotion, motivation, etc.), are not simply unitary processes and, therefore, will not be readily localizeable, at least until they can be analysed into their basic elements or factors."

Since the functions of a part depend on its state and on the source of activating stimuli received by it at any given moment, an accurate assessment of the functions of a part must specify the exact conditions in which it operates—i.e., the pattern of behaviour at that instant. Knowledge of how to initiate specific types of behaviour can alone provide the conditions for this type of study. Study of the lower vertebrates and insects shows that a knowledge of the structure of behaviour can give an insight into the motives operating at any given moment, and that predictable behaviour patterns can be initiated by the appropriate environmental conditions. For example, an effect of changes of "mood" on posture has been demonstrated by Von Holst (1950), who showed that orientation to light and gravity in fish is altered by the state of hunger.

Mammalian behaviour contains the same elements, a knowledge of which will make it clear, for example, that some types of rat behaviour can only be activated after the rat has become familiar with its environment. This arises from the fact that the establishment of territory by the rat is a prerequisite for all its behaviour other than exploration. When a pattern of behaviour of this kind is understood, it is also possible to distinguish the functions of learning, which may help either to stabilise an innate pattern or to substitute for it an acquired one. Sprague et al. (1955) conclude the quotation given above by suggesting:

"It is perhaps more obvious in behavioural studies than elsewhere, that the mechanisms whereby structure yields to function may be exceedingly complex."

This conclusion, however, shows that the essential quality of behaviour studies has been missed. Behaviour studies provide a knowledge of the way in which the system is organised. When this is known, various behavioural elements can be stabilised simultaneously by controlling the relevant environmental factors.

In this way specific motivation, mood, and general activation may all be determined at one time. An example of how accurate this specification can be is to be found in the study of the competition between feeding and investigation on the rate of feeding in the laboratory rat (Chance and Mead 1955).

Control of Biological Responses

Lane-Petter (1953–54) drew attention to a fallacy which still influences the approach of most experimenters in the biological sciences ancillary to medicine:

"It is a fallacy which scarcely needs emphasis among biologists to regard experimental animals as inanimate reagents and to make no allowance for the physical responses of these animals to environmental factors which are not immediately physical, but exert their effect through altered behaviour. According to this fallacy, if the animal does not grow, the diet is at fault; if it does not breed, there is an endocrine disorder; if it will not keep still while it is being inoculated, it must be forcibly restrained. Such paralogism is not possible if the animal is regarded as having its own innate behaviour pattern, representing one of the links between the physical environment and the physical response of the animal."

This was said about the care and handling of laboratory animals and applies equally well to the influences affecting animals undergoing experiments. Methods for increasing the reliability of physiological and pharmacological responses are one of the foundations for the rapid advance of therapeutics in the recent decade. This reliability has been achieved mainly by improving the reproducibility of results and by accuracy in measuring them. This is done by increasing either the number of animals used or the number of observations made on the same animal. The reliability is assessed statistically.

Attempts have also been made to increase the uniformity of responses because this would not only increase accuracy and reproducibility but also reduce the labour involved. Most of the thought and effort devoted to such attempts has hitherto been concerned with obtaining genetic uniformity of the stocks by inbreeding. Though there is no doubt that some success in reducing variation of genetic origin has thus been achieved, the value of inbreeding has been seriously questioned, because it has become clear that, for many kinds of biological response, "hybrid vigour" provides the essential hereditary requirements of a stable response. Thus, much of this effort over the past quarter of a century has been misdirected because of inadequate experimental work in the early stages. Although an immense effort has been made in this direction, the unsoundness of the position was only recently noticed when the geneticists turned their attention to the problem (Mather 1946, Gruneberg 1954)—a classic instance of success awaiting fundamental systematic knowledge.

Yet, though it is agreed that the biological propensity of an organism depends not only on its hereditary but also on its environmental conditions, which provide the opportunities for the inherent faculties to develop, little is known about the most sensitive methods of measuring the responses to environmental stimuli—i.e., the behaviour of animals widely used in experiments. Are we therefore justified in neglecting this fundamental field which is clearly concerned with a component of the responsiveness imparted by heredity?

In view of the failure of genetic methods through a lack of sufficient knowledge, it would be folly to repeat the mistake now that the question of the hereditary basis for physiological uniformity has been reopened (Emmens 1939, McLaren and Michie 1954, Claringbold and Biggers 1955). If a repetition of the mistake is to be avoided, the results of mammalian behaviour studies must be made available.

A recent survey (by no means comprehensive) revealed biological assays whose unreliability, despite the use, in some instances, of inbred stocks, was so great as to cause concern to the experimenters. An obvious line of approach is to investigate the environmental influences. In a few studies where the influence of the environment, acting through the behaviour of the animal, has been found to influence the variability of response, solutions to

specific problems have already been found, but only because the approach was based on well-established knowledge of behaviour (Chance 1947, 1956). The results have, however, already been sufficient to suggest that, to decrease the variability of the response, the provision of the exact conditions required may be more important than placing constancy of the total environment before knowledge of the specificity of certain elements. This is because some elements of the environment have little or no importance and others are all-important not only in obtaining reproducible responses but also in reducing the difference between individual animals.

The animals respond by altered behaviour not only to factors in their physical environment but also to social influences which are only part of the animal's reaction to living things in general.

In the laboratory many experimenters have noted that success in an experiment is more often associated with one assistant than another. Too often this is dismissed as due to his technical skill when in reality it may be due to the reaction of the animals to the assistant. Quantitative differences in the way animals behave have been found in this laboratory to be highly correlated with particular observers. This fact clearly shows that the animals not only distinguish between different observers but also express this recognition in unexpected ways.

Lane-Petter (1953–54) reported that the rate of growth of mice was different at the weekend from that in mid-week; and Prof. J. H. Burn has told me that it is a regular practice in his department not to start adrenaline assays on Mondays, because his animals almost invariably react less uniformly than in mid-week.

Denton (1957) shows that sheep salivate constantly, but that the rate of salivation can be augmented naturally, not to the sight of food but to the sight of other sheep feeding. When, therefore, food is brought to a solitary sheep in the laboratory, the salivary reflex is absent, and no conditioning to the experimenter is possible; but if another sheep is brought in and fed in the laboratory, conditioning of the first sheep becomes possible.

Here there is an innate social response reflected in a change of salivation. No clearer example could be wanted of how important an understanding of the innate organisation of behaviour is to proper experimentation on animals.

Lest it be thought that what has been said may be true of a few limited aspects of physiology only, it should be noted that nervous influences are now known to affect the circulation, the composition of the blood (Bevan 1951), the size of endocrine glands (Christian 1955, Chance 1956), the excretion of sodium, potassium, water, and vitamin B (Worden et al. 1952), the incidence of neoplasms in mice (Andervont 1944), and the intervertebral discs of voles (Scott 1955).

Tranquillisers

Our awareness of the possibilities of modifying brain function by the action of drugs has been dominated, since the discovery of anæsthetics, by the gross effects of sedation and the antagonistic effect of stimulants. Obliteration of whole modalities and, indeed, all but the barest essentials for the life of the brain characterises the requirements of anæsthesia, in which the greatest advances of neuropharmacology have been made. Until recently progress in this field has been dominated by the search for chemicals possessing the main action shorn of as many side-effects as possible, but this progress has only been possible by great attention to the diverse actions of an anæsthetic. Nevertheless, the lack of knowledge of mammalian behaviour at present stands in the way of exploring the possibility of modifying the more subtle integrative functions of the brain. So far discoveries of this kind have largely been incidental.

Now the advent of "tranquillisers" has found us completely unprepared. The concept, although originally definable in terms of the observations made on chlorpromazine, reserpine, and benactizine, now obscures a confusion which can only become greater without a systematic knowledge of the way behaviour is organised in laboratory mammals. The interest that the discovery of these substances has aroused in the screening of new substances for tranquillising action arises from a keenly felt but poorly informed awareness that brain function can be modified by drugs in many more ways than has been suspected so far. Under the guise, therefore, of searching for "tranquillisers" every kind of test of behaviour is being pressed into service in the scramble for new drugs with possible useful actions on the brain.

The various procedures that can be devised are limitless in design but correspondingly limited in the information that they can provide without the necessary well-founded knowledge. Some of them are non-specific, throwing up for further investigation many more substances than are found to be of interest. When the behaviour of the animal is used as the criterion of response, as in some of the more ambitious tests, the attempt is not made to understand the behaviour but merely to define certain component acts which are then classified and their modification by drugs noted. This method, although on the right lines, is at present becoming unwieldy because the modifications in the behaviour have no meaning, and very little information is gathered from a mass of data.

Only when the manifestations of the integrative activity of the brain are recognisable from a knowledge of the behaviour of each species of animal will it be possible to distinguish readily between drugs producing disruption of normal brain function and those possessing a smooth selective action.

Conclusion

It is usually assumed that, in important respects, most mammal species do not sufficiently differ from each other in their behaviour for the differences to be of any significance in studying the functions of the brain. This attitude is false. However, that does not do justice to the full claims of studies already undertaken, because animals express themselves in unexpected ways, which may in particular instances make it easier to detect a particular function of the brain through the behaviour of one species of animal rather than another. The diversity of behaviour in different animals should therefore not be allowed to be an impediment but should be studied for the opportunities which it provides.

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In England Now

A Running Commentary by Peripatetic Correspondents

THERE is nothing more exciting than a new hobby. My latest is now four months old. It is the age-old sport of tracing one's forebears. I possess a surname which is just about as Scots as it could be, but my father's people were all from Cornwall. The family tradition is that they came there from Scotland "three or four generations back." I have often wondered why, and precisely where from, but it was only lately that I decided to try to find out.

The best way to begin is to buy the book by L. G. Pine called—simply enough—*Trace Your Ancestors*. Then you pump the memories out of your oldest sensible relative. After that you start writing to Somerset House. The Public Record Office will help, too, with census returns and such like. This type of central record will take you back to 1837 or thereabouts. But beyond that you must go to the parish registers—if they exist: for there is a great deal of luck in these matters. You may get stuck quite early, but the average tree can be traced back to the middle of the seventeenth century.

It looks as though my parentage is going to prove to be still Cornish at least as far as my great-great-great-grandfather. On coldly ascertained facts, however, I can only be certain—so far—about my great-grandfather, who was a native of Penzance and who lived to the ripe age of 83. He died in 1886 and his death certificate reads:

> Disease of Heart (Uncertain).
> Asthenia.

—a candid statement which is signed: Humphry Davy, M.D., M.R.C.S. I knew that the great Sir Humphry came from Penzance, but not that he had medical descendants. It would be interesting to find out for certain whether this Dr. Davy—but no, this is a pursuit in which too much sidetracking must at all costs be avoided. As it is, I am spending my evenings in an unaccustomed correspondence with vicars, and my days in the purchase of postal orders.

* * *

Working for higher examinations leads to family complications. We watched this process disrupt the lives of our friends, listened sympathetically to the husbands' sighs on failing their examinations, and to the wives' complaints of boredom and neglect. In our family, when the time came for Father to work for the M.R.C.P., we decided that the only solution was for Mum to do it too.

At first it was a joke. Mother's textbooks, finally located in the cellar, were covered with mildew and years out of date. Her stethoscope had long resided in the toy cupboard, part of the essential equipment of the Lone Ranger and Davy Crockett. She found that it failed to conduct sounds of any kind, which she assumed was due to disuse atrophy of the paths concerned with the finer aspects of hearing and the automatic exclusion, after years of conditioning, of all sounds except actual screams. However, after the removal of earth, stones, and unidentified foreign bodies, she found that she could still hear heart-sounds, and the children lined up obligingly. This was followed by ophthalmoscopic examination. There is probably no better way of learning to examine a fundus than on a row of coöperative children, pupils widely dilated in wonder.

So it became a family affair. The children took a personal pride in Mother's homework, left a place for her at the table after tea, and protected her new textbooks from the onslaughts of the most junior members of the family. John, who is old enough to be aware of examinations looming ahead, was heard to inform his pal next door: "My mother's awfully clever. She does exams. just like big boys do." The hospital, hitherto regarded as the place "where Daddy's money comes from" and where Mother retired at intervals to collect a new baby, became also "Mummy's school," and there were puzzled inquiries about her "position in the class" and whether or not she got the cane. The spring cleaning has been omitted this year, but Father can work untroubled in the evenings and is tolerant of quick meals out of tins.

The effects of recurrent childbearing on the female intellect have never been seriously studied. It can only be said that, unlike the other wives we know, Mother has been blissfully happy during these pre-examination months. She finds the process of learning more difficult than before, but reckons she has gained a great deal of common sense, which helps to compensate. Sometimes, when Father tires of evening lectures and postgraduate courses, she goes in his place while he looks after the family, and this makes a change for both.

Now that the examination is near, and Mother has even scraped the guineas from the housekeeping for the fee, she shows none of the classical signs of pre-examination strain. She sleeps well and eats well and the printed words do not dance before her eyes. We have, however, several times run out of sugar and other essential articles of food, though the family felt that this was offset by the day on which she bought a large block of ice-cream, having forgotten that she had previously arranged for one to be delivered. Once the baby went to a party wearing a red shoe and a white shoe. But no more serious catastrophes have occurred.

The only trouble is that, higher examinations being what they are, and pass-rates what they are, John, who is rather bright, will almost certainly pass the eleven-plus before Mother gets her Membership. And what will the family think of her then? Never mind. Father has had peace, quiet, and amusement while working for *his* Membership.

* * *

In a semi-official circular which has just reached me, I am described as a "peripheral pathologist." Now I'm sure the eminent and earnest members of the committee had not the slightest intention of being offensive, but for all that, I am offended.

Country pathologist, non-teaching-hospital pathologist, general pathologist, even provincial pathologist—all these attempts at classification I would accept, for there is no doubt that there is a difference between the jack-of-all-trades pathologist of small group hospitals, and the monorail central pathologists with their research facilities and vast funds of knowledge, sometimes of one small sector only of the boundary of pathology. As I wrote that last sentence, I paused. Do you think perhaps the committee was paying me an occult compliment? It may be they intended to imply that peripheral pathologists cover the whole boundary or periphery of pathology, and not only one small sector. But I see in another part of the circular that they write about a "pathological subcommittee." I agree with them, of course; that's my feeling exactly about all subcommittees, but I'm sure they didn't mean it that way, so I am doubtful that they meant "peripheral" that way either.

* * *

We have all heard of keeping coal in the bath, but I doubt whether many people have tried our tip of keeping mice in the bath.

It all started when our eldest caught a field vole on the mountains of Arran, carried it down the mountain inside his windjacket, and eventually home to Glasgow. Alas! it soon met an untimely end at the paws of the cat to whom, obviously, all rodents are alike. Our son was inconsolable and his flood of tears was only stemmed by the promise of a mouse from hospital. The mouse arrived next day and was such a success that another was demanded for company. The mice were kept in a bird-cage whose rightful owner had also been eaten by the cat. Together the mice planned escape and one evening were found running down a wardrobe, having escaped from the cage by an unknown exit. The only rapid solution for that evening seemed to be to dump the cage of mice in the bath.

I can now record from scientific observation that it takes more than scented soap and talcum powder to eliminate the smell of mouse.

* * *

From an examination paper.—"When on anticoagulants the patient must have a blood cheque frequently." Is this yet another demand on the blood bank?

Letters to the Editor

SECOND THOUGHTS ON ANTICOAGULANT TREATMENT FOR MYOCARDIAL INFARCTION

SIR,—The articles of Dr. Honey and Dr. Truelove [1 2] and your editorial [3] added to the dilemma of the doctor confronted by a patient with an acute myocardial infarction. Professor Holten [4] has pointed out several flaws in the compilation and analysis of the data, and I hope that the following comments will further clarify the matter.

The suggestion that the study of the committee on anticoagulants of the American Heart Association [5] was influenced by the fact that there were more patients in the treated than in the control group requires an answer. It should be pointed out that such a relation is of clinical importance only if it results in a biased result which would alter the conclusions of the study.

While slightly more than the expected proportion of patients, for some unidentified reason, were admitted on even days of the month and were thus eligible for anticoagulants, and while a few others were given anticoagulants as an exception, most often after a thromboembolic complication, it was possible in our study to evaluate the effect on outcomes of these minor deviations from pure randomisation. This solution was possible because (1) the data regarding these cases were systematically recorded each hospital day in great detail and the reports submitted included an abundance of statistically usable information on presenting signs, symptoms, history, laboratory findings, indicators of risk and severity, &c; and (2) the samples were large enough to permit extensive comparisons of comparable subgroups identifiable by these indicators. These and other resources were used to assess the implications of a variety of minor differences between the control and treated groups. Although the results were published in great detail, Honey and Truelove make no reference to this extensive analysis of the problem of bias or its conclusions.

In brief, the following were among the points made in summary of the committee report:

(1) Differences between the control and treated groups were minor or imperceptible, of mixed direction, and usually well balanced with respect to their possible effect on outcomes, in so far as factors antedating treatment with anticoagulants were concerned.

(2) Of 42 tests of the statistical significance of differences between the control and treated group in general composition, history, manifestations of the illness during the initial period and first week, none showed a difference large enough to be statistically significant at the 1% level.

(3) In some important respect, notably severity of illness at onset, the treated group was initially more handicapped in prognosis than the control group, 31% of the former as compared with 26% of the latter being reported as severely ill at onset. This is the reverse of the bias anticipated by Honey and Truelove on the basis of their experience.

(4) An extensive analysis of outcomes in which control and treated groups were compared *for comparable subgroups* or for total groups *after statistical correction for minor differences* in composition indicated that the treated group showed: (*a*) a dramatic and remarkably consistent percentage drop in the number of complications regardless of whether the samples were subdivided by age, sex, weight, type of care, severity, estimate of risk, location of infarction, arrhythmias, or heart-failure or shock; and (*b*) in the case of deaths the improvements associated with anticoagulant therapy were less consistent percentagewise among subgroups and less dramatic, but almost all subgroups showed a more favourable record with than without anticoagulant therapy.

It was concluded that "the presence of some difference in the over-all death-rate associated with anticoagulant therapy cannot be attributed to any possible bias in the sampling process since any reasonable system of reweighting the components that could be conceived of, while it would alter the amount of the observed difference, could not eliminate it entirely." It was also concluded that the "evidence leaves no reasonable doubt that the use of anticoagulant therapy substantially reduces the incidence of thromboembolic complications during the first six weeks following the onset of coronary thrombosis with myocardial infarction."

There was no evidence that the patients of Honey and Truelove were carefully studied during their entire hospital stay for the purpose of detailed analysis later. This is a major weakness in all such reports. There was no mention of a control or a satisfactory matching procedure in their series and the evidence for bias is substantial. It represents an after-the-fact study of a transition period during which doctors treated patients in each instance as they thought best. There is no evidence as to what proportion of treated patients received optimal or even minimal adequate treatment or what proportion of the time the total group was being adequately treated. As we have repeatedly emphasised, "the mere use of anticoagulants is not enough." These are certainly not ideal conditions for the evaluation of a new form of therapy.

Since we omitted from our series cases dying during the first 24 hours in hospital (and such deaths constitute by their evidence a very large proportion of total deaths during the first 48 hours in hospital), our findings should be compared with their findings on late deaths, not with their findings on total deaths. When used in this manner, and with corrections for cases not receiving the benefits of anticoagulants, our findings and theirs are exceedingly close.

The benefits reported by Honey and Truelove represent the results when 20·1% of the patients surviving the first 48 hours in hospital did not receive anticoagulants, but the chances are great that the main factor was not contra-indications since in our study only 1·2% of the odd-day group eligible for treatment could not be treated because of contra-indications. If this proportion is applied to the 224 cases surviving the first 48 hours, one can estimate that perhaps 3 of this group were true contra-indications. On this basis there would be 42 patients not receiving anticoagulants for other reasons. Since 48·9% of the 45 died, they were obviously a very sick group. In fact, their fatality-rate is almost precisely that of our own severe-at-onset control group—namely 48·8%. If, using this evidence, the two groups are presumed comparable, one is tempted to conclude that given the same advantages as our treated group severe at onset, their deaths might have amounted to our treated group rate for this same group—namely, 35·2%. If the difference (13·6%) is applied to the estimated 42 cases not receiving anticoagulants for reasons other than contra-indications in the Honey and Truelove study, one notes that approximately six additional lives might have been saved in the late deaths group. In this event late deaths in period III would have numbered 41 instead of 47 and the proportion dying in the late period, 18·3% instead of 21·0%. This estimated figure of 18·3% for full-coverage anticoagulant therapy contrasts at least as well with the period-I fatality-rate of 28·3% as do our own treated and control groups (16·0% versus 23·4%).

In addition, still further problems arise in the use of an earlier period as a control. Given this method, there may be reasons other than the trend towards the hospitalisation of mild cases which would confuse the picture. Fig. 10 (p. 1160 of Honey and Truelove's first article) suggests a problem here, since it shows a fatality-rate for late deaths in period II when about 4 in 10 received anticoagulants that is higher than in period I when this treatment was not in use. The following are among the possibilities that come to mind:

(1) The base period of 1940–47 was a war period when dietary and stress factors were both abnormal and medical facilities were absorbed with the care of war injuries. In addition, the actual composition of the population under medical care in England was altered by the absence of substantial groups on foreign war assignments,

1. Honey, G. E., Truelove, S. C. *Lancet*, 1957, i, 1155.
2. *Ibid*, p. 1209.
3. *Ibid*, p. 1339.
4. Holten, C. *Ibid*, Aug. 3, 1957, p. 241.
5. Wright, I. S., Marple, C. D., Beck, D. F. Myocardial Infarction. New York, 1954.

(2) Perhaps, in addition to an increase in admissions of mild cases, there has been a trend toward earlier admission to hospital of myocardial infarction cases in general. This would be an expected result of the effort to give patients the early advantage of anticoagulant therapy. If there has, in fact, been such a trend, it becomes serious for comparisons that the distinction between early and late deaths is based on *hours after hospital admission*, not hours after the onset of the attack. Since, as demonstrated, deaths in the early period are very high, any increase in early admissions would increase the likelihood that deaths formerly occurring at home would occur in the first 48 hours in the hospital and deaths formerly classified in the first 48 hours would with an earlier admission fall in the late-deaths period. Thus a trend to earlier hospital admission could, using these time periods based on time of admission, obscure the benefits of anticoagulants in a retrospective study of this type.

In spite of these and other difficulties inherent in the methods used by Honey and Truelove, there remains a persistent improvement in the death-rates of patients on anticoagulants as against those not receiving anticoagulants.

In period III there were 10 fewer deaths than would have been expected if anticoagulants had not been used. This is in spite of the fact that 25% of the patients did not receive any anticoagulant therapy, and we have no knowledge of how many received inadequate anticoagulant therapy. Even assuming that this figure is the maximum which could have been obtained, the saving of 10 lives seems worth while.

Honey and Truelove report that at necropsy the only appreciable source of improvement was in terms of pulmonary emboli. No mention was made of cerebral emboli or thromboembolism elsewhere in the body as in an individual or contributing cause of death. In this regard the series varies from many other studies for an unexplained reason. It may be explained by less detailed autopsy studies. However, a drop from 6% to 1% in fatal pulmonary emboli should not be belittled. Our surgical confreres go to great extremes to develop techniques which will improve their statistics by 5%. Should not internists be equally interested in such an improvement?

In your editorial the implication is clear that a patient must be removed to the hospital to receive anticoagulant treatment. This is no longer a fact. Thousands of patients are constantly receiving this therapy under the care of conscientious physicians and good laboratory services. The futility of attempting to select those patients who will have an uncomplicated recovery from the "poor risk" cases has been repeatedly emphasised.[6]

Finally, more than fifty teams of authors throughout the civilised world have published confirmatory reports, many of them with controlled series, attesting to the value of anticoagulant therapy in the treatment of myocardial infarction. A small number have expressed doubts regarding it, but thus far a well-developed and controlled series has not appeared to demonstrate that anticoagulants are not of value in the treatment of myocardial infarction. Each physician must decide regarding the merits and risks of such therapy as it applies to an individual patient, but he should carefully weigh the total evidence, including the methods used in compiling and analysing data before drawing his own conclusions regarding the scientific worth of this evidence.

The New York Hospital, New York. IRVING S. WRIGHT.

INFLUENZA

SIR,—I wish to support the letter from Prof. J. W. McLeod in *The Lancet* of Sept. 28. I was actively concerned with the influenza pandemic in France in 1918, both as a pathologist and bacteriologist in charge of a mobile laboratory and as a physician. One of my sad duties, in the height of the pandemic, was to deal with the patients dying acutely, often within 24 hours, of uncomplicated influenza generally accompanied by the characteristic heliotrope cyanosis. I carried out necropsies on a number of these patients. The main bronchial tree was always intensely swollen, bright-red, and dry. On scraping with a firm platinum loop, both before and after removing a patch of mucous membrane, *Hæmophilus influenzæ* was always obtained abundantly, virtually in pure culture. At this time, of course, none of us was familiar with virus investigation, although the possibility of a viral cause for influenza had been much discussed.

Since the viral cause of influenza became fully established, I have often mentioned my results to virologists and younger bacteriologists, with the suggestion that *H. influenzæ* should not be discounted as a negligible factor in the early stages of invasion by the virus. This view never seemed to attract much interest among my listeners, but Professor McLeod's letter prompts me to refer to these 1918 results again.

I believe that in attempts at prophylactic control of influenza, and with the possibility of another pandemic before us in winter, *H. influenzæ* as a possible concomitant ætiological agent, along with the entering virus, still deserves consideration.

Winchester. JOHN W. MCNEE.

CONSULTANT AND SPECIALIST

SIR,—I fully expected that my giving routine work in chronic psychiatric wards as an example of responsibility suitable for a career medical officer in hospital who fails to attain consultant rank would be provocative to some of your readers. So would have been any other such example from whatever branch of medicine or surgery I might have drawn it. Is this not a healthy sign that we should all welcome?

The more we examine hospital medical staffing problems with precision the more we find ourselves in the following inescapable position. If sustained drive, enthusiasm, high ability, a progressive outlook, and a mastery of the subject (as distinct from the routine outlook) are desirable in a career medical officer, then these are synonymous with consultant skills and he must be given consultant status if he is to be treated with equity and to give of his best. If, as a career officer, we employ him in any lesser grade, except during his training period, it would be wrong of us to expect him to possess or exercise these skills. We must pay for what we want, otherwise we are exploiting him. This was the whole point of Spens.

Protests such as my last letter provoked are healthy because they show that with the progress of knowledge the area of routine work in medicine and surgery is diminishing. Those of us concerned with the application of the S.H.M.O. circular which has controlled this grade for some years recognise that it now needs some revision, limiting the use of the grade still further. Thus the Royal College of Obstetricians and Gynæcologists has recommended that no more S.H.M.O.s in obstetrics be appointed. The Faculty of Anæsthetists has made a somewhat similar declaration. Experience has shown that probably no more such posts should be created in radiology.

I completely agree that advances in psychiatry have made it desirable to increase the number of consultants in mental hospitals at the expense of subconsultants, even if the routine worker cannot completely be eliminated at present from this field.

London, W.1. T. ROWLAND HILL.

SIR,—The public will read with interest the suggestion of Dr. Rowland Hill (Sept. 7) that the standard of medical care that they may expect from the National Health Service should vary according to that portion of their anatomy which is affected. I presume that Dr. Rowland Hill implies that from a patient's point of view acute pulmonary tuberculosis is less of an urgent problem than

6. Wright, I. S. *J. Amer. med. Ass.* 1957, **163**, 918.

acute gastritis and that an attack of acute schizophrenia is less alarming than a broken leg. It is surprising to read his final paragraph in a medical journal; from my experience as a consultant psychiatrist the chronic psychiatric patient presents a far more difficult clinical problem than a patient in whom the attack is of recent origin.

Brandesburton Hall,
Driffield, East Yorks. J. NEWCOMBE.

DIET AND CORONARY THROMBOSIS

SIR,—I was not able earlier to comment on Mr. Cobb's suggestion (Aug. 24) that vegetable fats, and particularly margarine, may prevent coronary thrombosis. Like so many of the other suggestions that have been made about dietary causes of this disease, his hypothesis fits some of the facts but not others. As he says, it would explain at least some of the differences in coronary mortality in different countries. It would also explain the higher mortality in the wealthier sections of the community, who eat less margarine.

It does not however explain the differences between men of different occupations, some of which I quoted in my paper (July 27). And in particular, it does not explain the changes in coronary mortality in this country for the decade after 1939. During that time, total fat consumption fell, and margarine consumption rose. According to Mr. Cobb, both factors should have resulted in a decline of coronary thrombosis. Yet the death-rate from coronary thrombosis increased almost twofold.

The purpose of my paper was to plead that *all* the known facts should be considered before an attempt is made to formulate a hypothesis.

Queen Elizabeth College,
London, W.8. JOHN YUDKIN.

FUTURE OF CHEST MEDICINE

SIR,—I have read your annotation of Sept. 7 with interest. An alternative title, of course, might equally have been What will the Chest Physician do in the Future? I, for one, think there is much work, apart from the management of tuberculosis, for the experienced chest doctor to do. In this respect, since being recently in New York City, I have become increasingly aware of the dilemma into which one aspect of chest disease falls here. It is this: when he is not acutely ill or in need of immediate treatment the patient with advanced pulmonary emphysema is not an acceptable candidate for admission to hospital, and a medical ward receiving him does so unwillingly and soon wishes to send him out. Yet many of these patients—in particular those with a meagre income—are able to do little other than the work involved in trying to breathe, and often are unable to earn enough money for food and lodging: they are dejected, depressed, and can lay more claim to having "the blues" than any other group of humanity. The sufferer from advanced pulmonary emphysema is one of the most pitiable figures in the living museum of medical disease. The situation is no different in Britain.

Sanatoria that are now turning to consider the treatment of the bronchitic patient are also admirably adaptable to the necessary technical investigation and long-term treatment of the patient with advanced emphysema: and the chest physician is the man equipped to apply the therapy which can bring very considerable relief to these patients—more relief, I think, than many doctors realise. And, while agreeing wholeheartedly with the conclusion of the Central Consultants and Specialists Committee for Scotland, that chest units should be brought into closer association with general medicine, I believe that the organisation of general medical wards is dislocated when they undertake the treatment of emphysematous (and bronchitic) patients especially in winter months; and that, in any case, treatment in the wards is not in their best interests. In the case of the patient with advanced disease these points are especially cogent, and after a few days' treatment he is often abandoned to his misery with a few pills.

In other words, here is a problem that is large, that has scarcely been tackled (in spite of, and apart from, the research into emphysema that is proceeding actively both in Britain and America), and for which both sanatoria and chest physicians are available; and it is one that may be expected to increase, for the antimicrobial drugs tend to protect these patients from death by acute respiratory infections. Sufferers from the disease could well be observed periodically in the chest clinic, and admitted to the sanatorium when acutely ill or no longer able to live their lives unaided. In either case the organised, combined, and continuous care of the chest physician, physiotherapist, and social worker would bring invaluable relief to this large and terribly afflicted portion of the community.

Chest Service, Bellevue Hospital,
New York. RAYMOND PARKES.

FAINTING AND CEREBRAL DAMAGE

SIR,—Dr. Bourne (Sept. 14) rightly stresses the importance of posture during dental nitrous-oxide anæsthesia and points out the dangers of cerebral ischæmia consequent on a sudden syncopal attack in the upright position. But he does not stress sufficiently the extremely important part played in these catastrophes by the low oxygen content of the inspired gases. A low cerebral blood-pressure can be induced and maintained safely in the reversed Trendelenburg position provided vasodilatation and *full oxygenation* are ensured. Any serious interference with oxygenation, which occurs only too frequently with "straight nitrous oxide," is particularly dangerous to both brain and myocardium when associated with a sudden severe fall of blood-pressure.

London, W.1. G. E. HALE ENDERBY.

RADIOACTIVE VITAMIN B_{12} IN THE DIAGNOSIS OF NEUROLOGICAL DISORDERS

SIR,—We have read with interest Dr. Glass's comments (Sept. 14) on the urinary excretion method of utilising radioactive B_{12} in the diagnosis of neurological disorders, and we appreciate the validity of the theoretical points which he makes. May we hasten to explain, however, that any references to publications of certain authorities does not necessarily imply that these authorities originated any particular technique. Literary allusions are intended as useful guides to those interested in following certain aspects of the problems discussed. Perhaps we might be permitted to add that in the interests of brevity certain phrases were omitted from the original draft of our article, as, for example, "advocated by" (Booth and Mollin) and "used by" (Arias et al.). Moreover, our discussion of other methods used was not intended as a "sharp criticism," but only to indicate the practical considerations which had led us to favour the Schilling excretion technique, which admittedly has certain disadvantages of its own, particularly if it is divorced from a clinical appraisal of the neurological problem. It would not be inappropriate to point out that in his latest review of the subject Dr. Glass [1] is able to devote considerable space to the advantages and disadvantages of the various methods of utilising radioactive B_{12}. No thoughtful authority is likely to regard his list of disadvantages as being intended as a sharp criticism. We have already discussed some of the disadvantages of the Schilling method with Dr. Booth and Dr. Mollin in earlier correspondence in your columns.[2,3] Perhaps Dr. Glass would be interested to read these letters.

1. Glass, G. B. J., Boyd, L. J. *Ann. intern. Med.* 1957, **47**, 274.
2. Booth, C. C., Mollin, D. L. *Lancet*, 1957, i, 375.
3. Liversedge, L. A., Berlyne, G. M. *Ibid*, p. 483.

Meantime, it should be re-emphasised that these tests are no substitute for an adequate history and examination, during the course of which the possibility of impaired B_{12} excretion, as a result of renal disease, should certainly have emerged.

Dr. Glass's assertion that a massive injection of vitamin B_{12} decreases the intestinal absorption of the vitamin and initiates maximal hæmatopoietic response, &c., is certainly theoretically correct, but from the practical point of view it does not interfere with the validity of the excretion test when applied to the particular clinical problems in neurology.

It is quite understandable that Dr. Glass is greatly in favour of his own method, but in addition to the disadvantages which he himself so generously recognises, his method requires the administration of cathartics, and also the administration of an enema, and so complicates the management of the test as an outpatient routine.

In conclusion, therefore, may we re-echo our own view, and that expressed by Dr. Glass amongst his criticism, that the Schilling test (properly applied, of course) is of definite practical importance in the diagnosis of certain neurological disorders; for that indeed was the whole point of our original article.

Department of Neurology, The Royal Infirmary, Manchester, 13. L. A. LIVERSEDGE G. M. BERLYNE.

METALLIC CORROSION IN ORTHOPÆDIC SURGERY

SIR,—In the many letters about the electrolytic degeneration of metallic implants of different natures, I have seen no reference to the possible part played by metal fillings in teeth. It would seem to me probable that in any case in which amalgam fillings are present in the teeth, there would be set up a difference of electric potential between these fillings and the implants. This might explain many cases of previously unexplained erosion of these implants.

St. Thomas's Hospital, London, S.E.1. J. H. HOVELL.

NEUROLOGICAL COMPLICATIONS OF MEASLES

SIR,—Your leading article of Sept. 14 mentions the use of steroids in post-infective encephalomyelitis. In a syndrome which has such an unpredictable course, it is difficult to assess the value of any treatment, but from my own experience I believe that corticotrophin (A.C.T.H.) or cortisone given within the first 12 hours of the onset of neurological symptoms modifies the illness. What is more certain is that steroid therapy delayed for 48 hours or more after symptoms have begun has no effect. This was suspected by Miller and Gibbons.[1]

I would agree with Tyler [2] that most of the deaths are due to convulsions. I would go further and say that most of the deaths are directly due to cerebral anoxia resulting from the convulsions, and are hence preventable with adequate sedation and, if necessary, assisted respiration. (It is of interest that another of your leading articles in the same issue deals with cerebral damage due to anoxic complications of other acute illnesses.) For this reason all such cases with prolonged convulsions or deep coma in my department are nursed in a respiratory poliomyelitis unit, where facilities for intubation and artificial respiration are readily available. Severe convulsions may well require sedation heavy enough to depress respiration, and in such cases sedation must be adequate, and respiration assisted artificially. Cessation of breathing during a convulsion can be similarly treated.

Infectious Diseases Unit, St. Ann's General Hospital, London, N.15. G. DONALD W. MCKENDRICK.

1. Miller, G. H., Gibbons, J. L. *Brit. med. J.* 1953, ii, 1345.
2. Tyler, H. R. *Medicine, Baltimore*, 1957, **36**, 147.

THE WOLFENDEN REPORT

SIR,—The suggestion by Dr. Field and Dr. Simpson (Sept. 21) that your correspondents should declare the "capacity" in which they write reveals that basically they have the same uncritical respect for the established order as has Dr. Learoyd (Sept. 14). Your correspondence columns would be dull reading if you did not trust your readers to recognise emotional bias when present, or to make their own assessment of opinions given without each author acting as his own compère.

My opinion is that the confusion of thought on all sexual problems—particularly homosexuality—is due mainly to generations of psychiatrists accepting uncritically as part of their "training" the narrow dogma of their specialty to the exclusion of physiological and anthropological knowledge.

The physiological patterns of the sexual reflexes were laid down at least as long ago in vertebrate history as the origin of the frog. They consist of grasping and thrusting by the male in response to stimulation of the ventral surface until ejaculation is reached and of reciprocal movements in the female. So far as I know homosexual activity has not been recorded in the frog, but its free occurrence in the lower mammals gives it a fairly respectable evolutionary standing, whilst its anthropological normality is concisely set out by Ford and Beach,[1] who conclude that it occurs in all human societies and is an approved activity in the majority.

Some doctors may give symptomatic treatment to those in trouble with contemporary laws, and, occasionally, they will find that their advice helps a sensitive young man to overcome his difficulties in making a heterosexual contact; but it is just as absurd for them to say they are treating homosexuals as it would be for anyone treating girls in the "beyond care and control" class to say he was treating heterosexuals.

Homosexuality is a social concept, and doctors who deal in social concepts without breaking them down into their biological components cannot hope to contribute anything to the advance of medicine, as Kallman and others [2-4] discovered in their genetic studies.

The truth probably is that the constitutional pattern of the sexual reflex varies in individuals, as does their physique, and possibly there is in everyone the rudiments of the reflex of the opposite sex (as with the mammary glands). It is reasonable to try to assess the constitutional and environmental factors that account for the varying pattern of sexual behaviour throughout an individual's life, but in our present state of knowledge it would be rash to say that any particular pattern of behaviour was abnormal in the sense that a dwarf differs from a very short man. It is an even greater folly to group the vigorous male who makes sexual contact with one of his own sex with his passive companion, as is the custom in medical discussions. It is the pattern of the individual's behaviour not the sex of his partner that determines his place on the sexual scale.

London, N.W.1. J. F. TUTHILL.

SIR,—Dr. Webster (Sept. 28) has been carried away by his analogy. If his letter were taken merely as a nice illustration of the dangers of reasoning by analogy it could be dismissed without comment. Unfortunately one knows only too well that there will be too many heads nodding in self-satisfied agreement.

I would merely like to make the small point that homosexuals are human beings and not cancerous cells, and that the body politic is an abstraction and not a fact. The purposes of law are complex, but we usually agree

1. Ford, C. S., Beach, F. A. Patterns of Sexual Behaviour. London, 1952.
2. Kallman, F. J. *J. nerv. ment. Dis.* 1952, **115**, 283.
3. Darke, R. A. *Ibid*, 1948, **107**, 251.
4. Lang, T. *Ibid*, 1940, **92**, 55.

that one purpose is reformation. It can now be regarded as a fact that imprisonment of homosexuals no more effects reformation than does the execution of murderers.

It would be helpful, in the heated discussions we are to be engaged in on this topic, to bear constantly in mind that we are dealing with living people, possessed of feelings, capable of happiness and misery. Those of us who work with them are very conscious of their misery.

London, N.8. STEPHEN COATES.

ENZYMATIC METHOD FOR DETERMINATION OF BLOOD AND URINARY GLUCOSE

SIR,—Following the article by Professor Huggett and Mr. Nixon (Aug. 24), it might be of interest to the smaller clinical laboratory to know that we have found it both economical and convenient to store single-assay aliquots of the glucose oxidase, peroxidase, *o*-dianisidine solution in test-tubes in a freezer. In this way they will keep at least four weeks, and there is no need for routine replenishment of the mixed enzyme solution.

Department of Pædiatrics, University of Colorado Medical Center, Denver, Colorado. FRANK IBBOTT
DONOUGH O'BRIEN.

FAT, FIBRINOLYSIS, AND ATHEROSCLEROSIS IN AFRICANS

SIR,—In his letter of Aug. 17 Dr. Higginson indicated that although arterial pathology is not uncommon in Africans " . . . the Bantu would appear to be relatively free from the complications . . . generally believed to be the result of severe atherosclerosis." His opinion is in conformity with the previous pathological findings of Becker [1] and with general clinical experience [2] in the Union.

These findings in South Africa emphasise the importance of Duguid's opinion,[3] supported by the subsequent report of the W.H.O. study-group on atherosclerosis and ischæmic heart-diseases, emphasising the need for elucidating the mechanism predisposing to and precipitating *the occlusive episodes themselves* in previously damaged coronary arteries. In another report [4] some of our findings and hypotheses have been outlined relating several possible origins of arterial injuries (and the progress of the latter to stenosis, tortuosity, and rigidity); suggestions were also made as to the possible rôles played in the occlusive episodes by tissue mucopolysaccharide increases (attendant on healing processes), by blood mucopolysaccharides, reticulo-endothelial activity, and by plasma-fibrin and fibrinolytic activity, as modulated by sex hormones and dietary fat. It was there also suggested that the severe liver disease, so widespread among Union Africans,[5–7] may be of some importance in " protecting " these people against coronary *thrombosis* despite the known frequency of coronary pathology in these people.

Our interest in this possibility was enhanced when we found, in rats, that males have significantly greater plasma-fibrin than females, and that, after a single standard fat meal, males not only develop more marked chylomicronæmia (at the same total blood-lipid levels as females) but especially that the fibrinolytic capacity of the plasma falls to two-thirds the basal levels in males but does not drop at all in females.[8] We have also shown all these parameters to be modifiable by sex hormones, in virtue of the profound alterations inducible by castration and/or implanting sex hormone pellets into male and female rats.[9]

If thrombosis is indeed a function, in part, of a disturbed ratio of plasma-fibrin to plasma fibrinolytic capacity, then, on the basis of our experimental findings, males could be expected to be more susceptible to thrombotic occlusion (especially if the coronary arteries have previously been injured) by virtue of their higher fibrin levels and the marked fall in fibrinolytic capacity regularly encountered three hours after a single fatty meal. This hypothesis, based on empirical observations, was partially confirmed experimentally in rats.[4 8] We were thus encouraged to seek for a similar basis to account for the rarity of coronary occlusive episodes in Africans, bearing in mind the frequency of gynæcomastia, testicular atrophy and other evidence of " feminisation " of males which we have shown to be present among these people in association with the almost ubiquitous severe liver disease.[5–7] We were stimulated to study this matter further by the report that cirrhotics in Hong Kong have markedly elevated plasma fibrinolytic activity,[10] and the observation that coronary occlusion is rare among individuals with hepatic cirrhosis.[11]

Plasma-fibrin and fibrinolytic activity, estimated in duplicate according to the method of Biggs and MacFarlane,[12] have so far been studied in 15 male African patients with known liver disease (established by biopsy). 13 male African medical students served as controls. We have found, as did Kwaan et al., that the plasma-fibrin level in subjects with liver diseases is usually somewhat higher than that in " normals." Especially noteworthy, however, was the far more active fibrinolytic activity of the plasma in patients with liver disease as compared with the controls (see table). It is perhaps also

—	No. of cases	No. of cases with 100% lysis of fibrin clot at times indicated (hours)				
		4	6	8	24	>24
Africans with liver disease ..	15	3	5	4	3	0
Africans (controls)	13	0	0	1	11	1
European males*	11	..	..	..	2	9

*Extracted from Greig [13] (table I).

important to note that among our African student controls fibrinolyzis was complete in twenty-four hours in a far greater number of individuals than was recorded by Greig [13] in Europeans; this may have been related to the younger average age of our students. Further, preliminary studies have also shown that, even after a standard high-fat meal, fibrinolysis in our liver cases was still completed in twenty-four hours and therefore was not as profoundly diminished by fat intake as was observed by Greig in healthy Europeans.

The fibrinolytic capacity of the plasma thus seems to be higher in Africans than in Europeans and especially so in Africans with liver diseases. The possibility exists that the latter pathology may, by elevating plasma fibrinolytic enzymes, decrease significantly the African's susceptibility to coronary intimal fibrin deposits and/or thrombosis, even in the face of both elevated plasma-fibrin levels and the existence of coronary pathology.

The African's low dietary fat intake may also play some additional preventive rôle, not so much by virtue of its effects on total blood lipids per se, but, we suspect, more indirectly. Thus, Greig showed in man, and we have now confirmed it in both rats and man, that the plasma fibrinolytic capacity is profoundly diminished following a single fatty meal. At what time such falls in the fibrinolytic capacity are initiated and for how long they are maintained after a single fatty meal is still being studied by our group. But obviously, the African, ingesting as little fat as he does, is less likely than the European to suffer this particular consequence of consuming meals, such as those usually eaten by Europeans, each of which contains at least moderate amounts of fats.

In how far, and in what ways, the " feminisation " of the African (i.e., gynæcomastia, testicular atrophy, &c.) and the elevated fibrinolytic activity in these people are related to the severe liver disease almost invariably present in these people

1. Becker, B. J. P. *S. Afr. J. med. Sci.* 1946, **11**, 1.
2. Bronte-Stewart, B., Keys, A., Brock, J. F. *Lancet*, 1955, ii, 1103.
3. Duguid, J. B. *Ibid*, 1954, i, 891.
4. Gillman, T. To be published.
5. Gillman, J., Gillman, T. Perspectives in Human Malnutrition. New York, 1951.
6. Gillman, T. Ciba Foundation Colloquia on Ageing, 1957, **3**, 104, 188.
7. Gillman, T., Lamont, N. McE., Hathorn, M., Canham, P. A. S. *Lancet*, July 27, 1957, p. 173.
8. Gillman, T., Naidoo, S. S. *Endocrinology* (in the press).
9. Gillman, T., Hathorn, M., Naidoo, S. S. Proceedings of Pathology Section, 41st South African Medical Congress, Durban, 1957.
10. Kwaan, H. C., MacFadzean, A. J. S. *Lancet*, 1956, i, 132.
11. Creed, D. L., Baird, W. F., Fisher, E. R. *Amer. J. med. Sci.* 1955, **230**, 385.
12. Biggs, R., MacFarlane, R. G. Human Blood Coagulation and Its Disorders. London, 1953.
13. Greig, H. B. W. *Lancet*, 1956, ii, 16.

still remain to be determined. However, our findings hitherto would seem to indicate, as suggested earlier by Woods and Laurie,[14] that the rarity of coronary occlusive episodes among Africans is not attributable solely to the lower incidence of coronary pathology among these people nor yet to their low blood lipids per se, but rather to other associated metabolic difference(s) and perhaps even those which we have here indicated to be present.

These possibilities are being actively explored by our group, clinically and experimentally, in the hope that greater understanding of the mechanisms promoting coronary thrombosis may yet be obtained from a study of the derangements in hepatic function, in sex-hormone and reticulo-endothelial activity, and several other consequences of that macromolecular syndrome which we believe to be present among Africans [5] and which may yet be shown to be responsible for "preventing" coronary occlusive incidents despite that premature senility which is so striking a feature of the Union African.

Of special interest, too, is the possibility, arising from these studies, that it may yet prove possible to assess the "coronary future" of individuals from a study of their chylomicronæmia, plasma fibrin, and fibrinolytic capacity under basal conditions and especially at various times after ingesting a single standardised fat meal.

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THEODORE GILLMAN
S. S. NAIDOO
MICHAEL HATHORN.

NERVOUS SYSTEM IN PORPHYRIA

SIR,—Your annotation of Sept. 14 mentions that Waldenström porphyrin may be the toxic agent active in acute porphyria. This hypothesis deserves to be subjected to experimental study, and I want to point out that this should be feasible on small animals, such as rats and rabbits, known to develop symptoms much like human acute porphyria after 'Sedormid' poisoning, by using uroporphyrin III prepared from the flight feathers of touracos by means of a recently described much simplified method.[15] Touraco feathers may be obtained from most larger zoos, and if necessary the birds may be reared for experimental purposes.

County Hospital,
Svendborg, Denmark. TORBEN K. WITH.

SNAKE-BITE AND ITS TREATMENT

SIR,—The letters of Sir Philip Manson-Bahr and Dr. Gibson (July 27) do great service in calling attention to the exaggeration of danger to human beings from snake-bite.

Among 443 Malayan victims known to have been bitten by potentially lethal snakes, such as the common cobra, the viper *Ancistrodon rhodostoma* (Boie), and sea-snakes, during 1955 and 1956, at least a third had no significant symptoms of poisoning at all. In only 16% did severe poisoning develop. For such patients the consequences can be extremely unpleasant, sometimes fatal, and they should be treated as medical emergencies. Clinically, it is usually possible to distinguish this minority at an early stage—as I hope to show in future publications. The majority, as Sir Philip wisely states, require only simple treatment. I would not, however, include injection of carbolic soap. It is most unlikely that such a procedure would help human victims of *Vipera berus* bites. Ahuja, who suggested this treatment as a result of animal experiments, himself admitted [16] that it only detoxified cobra and krait venoms—it had no action on Russell's viper venom. In the treatment of bites in human beings it would almost certainly do more harm than good.

General Hospital,
Penang, Malaya. H. A. REID.

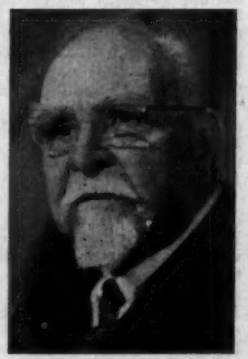
14. Woods, J. D., Laurie, W. *Ibid*, 1957, i, 1091.
15. With, T. K. *Nature, Lond.* 1957, **179**, 824; *Scand. J. clin. lab. Invest.* (in the press).
16. Ahuja, M. L., Singh, G. *Indian J. med. Res.* 1954, **42**, 4.

Obituary

RUDOLPH MATAS
M.D. New Orleans

Rudolph Matas died on Sept. 23 in New Orleans, where he had lived nearly all his ninety-seven years. By his ingenuity, skill, and vision vascular surgery was called into being; by his lucid pen, patient observation, and careful garnering of clinical material its growth was fostered; by his integrity, humanity, and friendliness his colleagues were refreshed and enriched. His work and personality were respected throughout the whole world.

His early education fitted him for the rôle he was to play in international surgery. He was born in 1860 in a parish close to New Orleans, the only son of a Spanish physician. Soon afterwards his parents returned to Europe, and Matas spent his first ten years in Spain and France. After the family's return to the New World he continued his education in Texas, Mexico, and New Orleans, where he qualified in 1880. Immediately after graduation he established himself there. He quickly built up a large surgical practice and when only 34 was appointed to the chair of surgery at Tulane University.



[*Surgery, St. Louis*]

He was perhaps lucky to begin his surgical career at a time when asepsis was turning apparent miracles into everyday performances, but he was not content merely to accept the security it offered. Instead with its help he challenged long-accepted procedures. His most notable exercise in iconoclasm was the substitution of sutures for ligatures in the treatment of aneurysm. He first used this method in 1888 when operating on a young Negro with a traumatic aneurysm in the left arm. Ligatures and extirpation of the sac had failed, and as a last resort to avoid amputation of the arm Matas decided to suture the orifices that were keeping the sac in pulsation. "I recalled" he wrote more than fifty years later, "the control of gunshot wounds of the intestines by suturing the orifices to prevent extravasation of intestinal contents, and it seemed a rational thing to control the hemorrhage by suturing the bleeding orifices. After suturing all the bleeding orifices within the sac (the wounded collaterals), I ordered the tourniquet released and found that the bleeding had all stopped. The sac became dry. Hemostasis was complete. In a short time the aneurysm dwindled to nothing as its blood supply was completely arrested, to my astonishment and great satisfaction. I then closed the wound, which healed, and the patient recovered with good use of the arm."

The success of this first attempt led him to use the method again with success, and he gradually developed and modified the technique of the operation, to which he gave the name of endoaneurysmorraphy. Cases were soon referred to him from all parts of the country. From his studies of the peripheral vessels he turned to the problems of aneurysms of the central and visceral arteries. In 1899 he introduced intralaryngeal insufflation, which opened the way to surgery of the thorax. Recognising the danger of interrupting the blood-flow in the main arteries he devised a method for their temporary occlusion. In 1923 shortly before his retirement he performed the first successful ligation of the abdominal aorta.

Though his work on the vascular system had the widest influence, his penetrating mind and gift of lucid exposition were valuable in many other directions. He was one of the first to recognise the advantages of local anæsthesia, and some sixty years ago was carrying out most major interventions with its aid. In regional

anæsthesia success is only possible to the master of anatomy; and here his anatomical knowledge, which he regarded as the first requisite of a surgeon, found full scope.

He also made important contributions to the cancer problem; and his early observations that, in itself, a black skin confers no immunity to carcinoma and that the coloured races have a special liability to tumours of mesodermal origin, such as keloid and sarcoma, have been fully confirmed.

A long retirement is not always the easiest part of a long life, but Matas showed to what good use these years can be put. He followed alertly, generously, and discerningly the important advances which were based on his own achievements. Only four years ago a paper of his was presented to the American Society for Vascular Surgery in which he reviewed the latest developments of cardiac surgery, the preservation of homografts, and the treatment of war wounds in Korea. His last papers were read by his colleagues, but for long he was an honoured guest at surgical meetings all over the world. At each he still found it easy to find new, if younger, friends. One of them, recalling their first meeting in 1947, writes: "Matas had flown from New Orleans to New York—and thence to London to attend the meeting of the International Society of Surgery. Afterwards he was flying to Madrid to visit his sister before returning to New Orleans, but then he was only 87!"

To his colleagues Matas's length of days gave a welcome opportunity of showing their gratitude and affection. During his years of practice he had already received, with characteristic modesty, all the official and academic honours which could be given him: honorary degrees from many universities; the honorary fellowship of the English College of Surgeons; the presidency of the associations and societies of his specialty and his profession; awards, prizes, and medals. And the time came when he no longer received awards, but presented to those who were continuing his work medals and prizes which carried his own name. From his colleagues he continued to receive the informal tributes of affection, and in one of his last messages of thanks he wrote:

"I feel that it is most gratifying, without the least exaggeration, that one of the simplest things that made the world progress, and probably one of the most attractive because of its very simplicity as well as its antiquity, was learning how to use the needle and thread with all their conservative applications in surgery as a substitute for the far easier, but obliterative, occlusive and crushing ligature."

It would not be untrue to say that the whole of his surgical work was based on his refusal to allow our complex, scientific, destructive civilisation to destroy his appreciation of the simple, the practical, and the constructive.

GERALD HUGH CAMPBELL OVENS

O.B.E., M.B. Lond., F.R.C.S.

Gerald Ovens, dean of the faculty of medicine and professor of surgery in the University College of the West Indies, died on Sept. 20 in Jamaica at the age of 49.

He was the son of the late Brigadier-General G. H. Ovens, C.B. After qualifying in 1932 he held house-appointments at St. Mary's Hospital and in 1936 took his F.R.C.S. He served for a time as assistant medical officer at St. James' Hospital (L.C.C.) before returning to St. Mary's as surgical registrar. During the late war he served in the R.A.M.C., and from 1946 to 1948, with the rank of lieutenant-colonel, he was adviser in surgery to the Palestine Command. Soon after demobilisation he became professor of surgery at Farouk University in Alexandria. In 1951 he was appointed to the chair of surgery in the new University College of the West Indies.

Though illness delayed him from starting work in this new post he soon proved his quality as an administrator and a planner, and it was largely thanks to his drive that the university teaching hospital was opened on time in 1952. The following year he was appointed dean of the medical faculty, and he spared himself no effort in working out the clinical curriculum. The ease with which the London University syllabus was introduced to the students owed much to his foresight. Of late he had turned all his energies to the plans for the new medical school.

R. P. M. M. writes:

Illness had dogged Gerald Ovens since 1951 and caused him to take to his bed for long and irritating periods, but he demanded no sympathy and apparently dismissed the thought of any change in his life or relaxation of the heavy burden of the work he had taken on his broad shoulders. His papers went to bed with him, and the output of valuable memoranda, minutes, and papers on university matters was thereby increased. He was a born chairman and an excellent committee man whose opinions, always carefully considered, came to be greatly valued. There are many in the University College who must be grateful for his advice and criticism. He was meticulous in detail and had a sometimes disconcerting capacity for pointing out faults and inaccuracies or looseness of phraseology.

He was an excellent clinical teacher and his *Introduction to Clinical Surgery* is a masterly exposition of what the introductory-course student must know. Many of his colleagues will remember gratefully his quiet corrections on points of diagnosis: he had an uncanny habit of being right. He understood the ways of undergraduates and had the welfare of his own students very much at heart, supporting all their activities and, as they matured into doctors, helping them to find posts which would suit them.

Gerald loved children and was thoroughly appreciative of the ordinary hospitality of family life. He was generous, with a delightful sense of humour, and a man of great culture whose pleasure was in reading and in collecting his library of medical history. He had a certain austerity and shyness which made it difficult for him to make friends. For me, initial respect—almost awe—changed to admiration, and that in turn ripened into friendship—and perhaps that is the way that friendships should be made.

CHARLES TODD

O.B.E., M.A., M.D. Camb., F.R.S.

Dr. Todd, who died on Sept. 22 at the age of 88, will be remembered for his serological studies on the specificity of the hæmolytic power of blood-serum in connection with heredity. He began this work in the early years of the century, while he was in Egypt, and continued it after his return to this country at the National Institute for Medical Research in Hampstead.

He was the son of the late J. Todd of Harraby, Carlisle, and from Carlisle Grammar School he went to Clare College, Cambridge, with an open scholarship. After taking a first-class in the natural sciences tripos in 1881 he continued his medical studies at St. Bartholomew's Hospital, where he also won an open scholarship. After qualifying in 1894 he held resident appointments at Addenbrooke's Hospital, Cambridge, and the London Fever Hospital. He was for a time medical officer to the Beira-Salisbury Railway before he became assistant bacteriologist to the serum department of the Lister Institute. This soon led to his appointment as director of the Serum Institute at Cairo. At the Lister Institute he had already become interested in the study of the blood, and in a preliminary communication in our columns in 1901 he described experimental hæmoglobinuria caused by a bacterial toxin (the bacillus megatherium). In Egypt he continued his studies of the nature of the blood. After his appointment as director of the Public Health Laboratories in Cairo he was responsible, with Dr. R. G. White, for the production of cattle-plague sera and he reported important observations on its varying specificity. For his services to the Egyptian government as member of the Egyptian Cattle Plague Commission in 1912 he received the Order of the Medjidieh, third class. He was also a member of the Egyptian Public-health Commission in 1918 and received the Order of the Nile, second class.

In 1926 he returned to this country and joined the scientific staff of the Medical Research Council. He was a member of the Colonial Medical Research Committee in 1927, the Foot and Mouth Research Committee, and the research advisory committee of the Empire Rheumatism Council. He was elected F.R.S. in 1930 and he was also appointed O.B.E. He retired in 1940.

W. S., who worked with him at Hampstead, writes:

Many tributes, richly deserved, will be paid to Charles Todd's scientific work, but I will always remember him chiefly

for his great human qualities. I have known few men who got such enjoyment out of life or who gave such enjoyment to those around. I believe that this was due to his absolute sincerity and to his genuine interest in everyone with whom he came in contact. When I worked alongside him at Hampstead during the years preceding his retirement he was equally beloved by all members of the staff irrespective of their age and status; for to him differences in age and status were of no account. Wise advice and practical help were ever at the disposal of any colleague who needed them, but it was his general attitude to work and life which were a constant inspiration to his juniors. He often spoke of his own research as "tremendous fun" and in this there was no shadow of pose or pretence. His delight in home-made gadgets which did a job better than some expensive piece of apparatus, his reminiscences of life in Egypt, and his fund of good stories enriched life at the time and now provide many happy memories for those who had the good fortune to work with him.

I had only occasional contacts with him after his retirement, but each occasion was an uplifting experience. Towards the end he had sad losses and many difficulties to face. His serenity never deserted him and I never heard him complain. Nor did I ever during the thirty years I knew him hear him utter an unkind or an ungenerous word. Such as Charles Todd are the salt of the earth.

ARTHUR MARCELLUS DE SILVA
K.C.M.G., C.B.E., F.R.C.S.

Sir Arthur De Silva, consulting surgeon to the General Hospital, Colombo, died on Sept. 22 at the age of 78.

After studying at the Royal College, Colombo, he came to the London Hospital and qualified in 1903. Three years later he took the F.R.C.S. and in 1907, soon after his return to Ceylon, he was appointed surgeon to the General Hospital. In 1930 he became senior surgeon. He was lecturer in surgery and clinical surgery from 1907 to 1940 and an examiner in surgery in the Ceylon Medical College. He was also on the staff of the Victoria Memorial Hospital, Colombo, and he was a member of the Public Service Commission. He was appointed C.B.E. in 1939, received his knighthood in 1949, and was appointed K.C.M.G. last year.

C. P. G. W. writes:

Although a general surgeon, Sir Arthur also specialised in the surgery of the ear, nose, and throat. He was for many years the best-known surgeon in Ceylon and enjoyed a wide reputation. The Medical College and the General Hospital seemed to revolve around him; and he helped to make the Medical College and to put the teaching of surgery in Ceylon on a firm and modern footing. He was a great naturalist and his special hobby was growing orchids, of which he was very proud. His knowledge of orchid culture was always in demand from those who were passing through Colombo. He was a lovable man, always out to help the student and his junior colleagues. He had many friends in England whom he was delighted to see when they visited Ceylon.

Sir Arthur married in 1909 Miss Laura Elizabeth Dias. There is one daughter of the marriage.

OLIVER ST. JOHN GOGARTY
B.A., M.D. Dubl., F.R.C.S.I.

BORN in Dublin on Aug. 17, 1878, the son of a doctor, Oliver Gogarty, the last of Ireland's "Wild Geese," died in the Beth David Hospital, New York, just as he had entered his 80th year. Educated at Clongowes Wood College, S.J., he entered Dublin University as a classical scholar, to follow in his father's profession. Graduating in 1907, he took his fellowship of the R.C.S.I. before setting off to Vienna to specialise in laryngology, and on his return to Dublin speedily jumped into lucrative practice. Yet, for all his success, surgery seemed always with him a secondary, never a primary, interest; highly gifted, physically and mentally, he found too many other interests in life to allow of his concentration on one accomplishment alone.

As an undergraduate he had been a prominent athlete—runner, cyclist, swimmer; ignoring the academic prizes of the School of Physic, from his freshman days he was an oft-quoted wit, at high table as at low, with a merry gift of rhyme, sometimes Rabelaisian and unprintable. He was, at the same time, a serious lover of letters; it is on record that he went to Oxford for a summer term to enter for the Newdigate Prize for poetry; but that was in days when I had not yet come to know him.

But I knew of him. The first time I can remember hearing the "two dancing dactyls" of his name was after I, too, had become a pupil at Clongowes, and out on a walk was shown the twist in the Liffey just above the little village of Clane, into which he had plunged to save another boy who, unable to swim, was being pulled into the "race." Some days later, the boy's father publicly presented Gogarty with a gold watch in token of his gratitude. Pocketing the gift, Gogarty smilingly declared that he would sooner have had a hamper: that, at least he could have shared with his friends. Almost half a century later, he was again to swim the Liffey in greater danger, and to bestow "a gift of swans" upon the river in gratitude for his safety. Is it not written that "coming events cast their shadows before"?

A surgeon's posthumous reputation is as written in water. If he has written on his subject, fresh advances so speedily relegate his name to the list of references at the foot of the journal's page. Of Gogarty's work at the Meath and Richmond hospitals thirty years ago not a student knows its extent or value today. He has written many lighter books in prose: their durability will be that of the pages on which they have been written. In conversation he excelled, and the laughter so constantly aroused by his sallies was the laughter-lore of "profligate, polyglot Panurge." George Russell ("Æ") once described him as having "the wildest wit in Ireland, from which nothing in Heaven or earth was immune." But in an Ireland that cherishes brave and melodious verse his lyrics will be remembered so long as there are men to quote them. In his introduction to the *Oxford Book of Modern Verse* (1935), which carries a dozen of his poems, William Butler Yeats declared him "one of the great lyric poets of our age." And Yeats was never one to bestow praise lightly.

In his books of collected verse one can perceive his love of beauty and of courage, his deep reverence of true craftsmanship, and—what few but those who knew him intimately were ever allowed to see—his inmost qualities of gratitude and humility. In September, 1938, somewhat hesitantly I had asked him to write an obituary notice of our leading specialist, Sir Robert Woods. Gogarty's assent was immediate. A few days later he sent me a full-page notice, every line of which was a tribute to his teacher's wide knowledge and delicate craftsmanship. With it came a covering note: "Here it is. I wish that I could do better, for to him I owe anything I know. This photograph will speak for him where I have fallen short." The photogravure was of an oil-painting of Sir Robert done by Augustus John, another of Gogarty's intimate friends.

For men of small mind, or pretentious men, he had little use. Instance, his gibe at a politician whom he described as "uncoiling his long length from his chair, like an illumination from the Book of Kells," or his wicked song of a Senior Fellow of Trinity:

> As I wambled awound
> On the gwound that was Gweece
> I was given that hound
> By the King's little niece,
> And had wather be fined e'er I found
> Him to gaze on his saddest surcease.

But for his fellow-craftsmen in letters he has composed many a worthy tribute—to A. E. Tyrrell, Stephens, Montgomery; to Lord Dunsany and Seamas O'Sullivan, who survive him—reserving for Yeats his longest and finest elegiac ode in which he tenders:

> A spray cut from that fine
> And rare plant, Gratitude,
> For anything I owe
> In the art of making songs
> Largely to you is due.

Beauty of countryside, particularly of Connemara in the West, and of women, he delighted to sing in verse as finely wrought as priceless jade. Thus he sings of the waveless bay at Kiltymon, "the one calm bay to which the pastures lean," with its:

> nameless wonderful hues
> That torture the eyes with joy,

where he sees, as in a vision, the woman of his dreams:

Tall, on a bare landscape
Where earth the stone upthrusts,
Holding your exquisite frock
Against the morning gusts,
And light is on half the rock.

And is there not an echo of Shelley in this verse, written as he caught his rhythms half asleep?

And up the back garden
The sound comes to me
Of the lapsing, unsoilable,
Whispering sea?

Of death he was unafraid, singing:

Enough! Why should a man bemoan
A Fate that leads the natural way?
Or think himself a worthier one
Than those who braved it in their day?

He has come home again to the countryside he loved, where they have wished him:

for his faith a happy lot:
The waving of the meadows in his song
And the spontaneous laurel at his tomb.

Requiescat!

W. D.

Births, Marriages, and Deaths

BIRTHS

WILKINSON.—On Sept. 20, at Hammersmith Hospital, London, W.12, to Vera, wife of Dr. R. W. Wilkinson—a son (John David Rupert Bell).

DEATHS

RAY.—On Sept. 29, in London, after a very short illness, Dr. Charlotte Ray, of 28, Cholmeley Lodge, Highgate.

Appointments

CHALMERS, T. S., M.B. Edin., F.R.C.S.E.: senior casualty officer East Cumberland group of hospitals.
CLAY, M. J., M.B., LL.B. Durh.: school M.O., Nottingham.
GORDON, E. H., M.D. Belf., D.P.H.: M.O.H. and divisional M.O., Sale and Lymm, Cheshire.
HUGHES, VERONICA T., M.B. N.U.I., D.O.: assistant ophthalmologist, Perth general hospitals.
JONES, P. F., M.CHIR. Camb., F.R.C.S.: consultant general surgeon, Aberdeen general hospitals.
KAY, D. T., M.B. Edin., M.R.C.P.E.: S.H.M.O., North-Eastern Regional Hospital Board tuberculosis service, Scotland.

Birmingham Regional Hospital Board:

ADAMS, A. R., M.B. Aberd.: assistant chest physician, Cheshire Joint Sanatorium.
CHITTY, KEITH, M.B. Camb., F.R.C.S.: part-time consultant surgeon, Mid-Worcestershire group of hospitals.
DOWNING, W. B. L., M.B. Birm., F.R.C.S.E., D.L.O.: part-time consultant E.N.T. surgeon, Birmingham (Dudley Road), West Bromwich and Lichfield, Sutton Coldfield and Tamworth groups of hospitals.
HENSON, PHILIP, M.B. Lond., F.R.C.S.: senior casualty officer, Coventry group of hospitals.
SMITH, IAN, M.B. Leeds, F.R.C.S.: part-time consultant surgeon, Burton-on-Trent group of hospitals.

Manchester Regional Hospital Board:

ANSELL, ABRAHAM, M.D. Lpool, D.M.R.D.: part-time consultant radiologist, Crumpsall, Booth Hall, and Monsall Hospitals.
BERLYNE, NEVILLE, M.B. Manc., D.P.M.: assistant psychiatrist (S.H.M.O.), Stockport and Buxton Hospitals.
BOARDMAN, D. L., M.B. Manc., D.PATH.: consultant pathologist, Oldham and district hospital centre.
DONNELLAN, D., M.D. Lpool, M.R.C.P.: consultant geriatrician, Salford group of hospitals.
RIGBY, CAROLYN C., M.B. Manc., D.PATH.: assistant pathologist (S.H.M.O.), Hope Hospital, Salford.
SHAFAR, SUZANNE, M.B. Glasg., D.P.M.: assistant psychiatrist (S.H.M.O.), North Manchester Hospital Centre.
WHITE, L. L. R., M.D. Wales, D.C.H.: consultant pathologist, Booth Hall and Monsall Hospitals.

Colonial Appointments:

BEAUBRUN, M. A. C., M.B. N.U.I.: M.O., Barbados.
BHATTACHARYA, B. P., M.B.: M.O., British Guiana.
BISSET, ALEXANDER, M.B. Edin.: M.O., British Honduras.
GHOSE, J. N., M.B., D.T.M.: M.O., British Guiana.
MACKENZIE, D. J. M., C.M.G., O.B.E., M.B. Edin.: director of medical and health services, Hong-Kong.
PRINCE, R. H., M.D.: M.O. (psychiatrist), Western Nigeria.
PUTHUMANA, J. P., M.B. Andhra: M.O., Western Nigeria.
ROLAND, P. E., M.B. Lond., F.R.C.S.E., D.L.O.: specialist E.N.T., Uganda.
TROUP, ISOBEL R. S., M.B. Aberd., D.P.H.: M.O. (special grade), Uganda.
WIEHE, J. A. J., M.B. N.U.I.: M.O., Mauritius.

Diary of the Week

OCT. 6 TO 12

Sunday, 6th

UNIVERSITY COLLEGE HOSPITAL
10.15 A.M. (Hospital for Tropical Diseases, St. Pancras Way, N.W.1.) Lecture demonstration by consultant staff of the hospital on tropical diseases likely to be seen in general practice in the British Isles.

Monday, 7th

UNIVERSITY OF LONDON
5.30 P.M. (University College, Gower Street, W.C.1.) Prof. A. R. Luria (Moscow): The Rôle of Speech in Normal and Abnormal Behaviour. (First of three lectures.)
INSTITUTE OF NEUROLOGY, The National Hospital, Queen Square, W.C.1
5 P.M. Dr. Henry Miller: Neurology in the General Hospital.

Tuesday, 8th

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Dr. Basil Morson: Spread of Malignant Disease. (Erasmus Wilson demonstration.)
UNIVERSITY OF LONDON
5.30 P.M. (University College.) Professor Luria: The Rôle of Speech in Normal and Abnormal Behaviour. (Second of three lectures.)
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Psychiatry.* Prof. Erwin Stengel: Undergraduate and Postgraduate Teaching of Psychiatry. (Presidential address.)
INSTITUTE OF CHILD HEALTH, The Hospital for Sick Children, Great Ormond Street, W.C.1
5 P.M. Mr. Dillwyn Thomas: Thoracotomy Findings in Primary Tuberculosis. (Alex Simpson Smith lecture.)
INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. J. S. Pegum: Keratinisation.
WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY, 91, Dean Street, W.1
5.30 P.M. Mr. J. Minton: Ocular Manifestations in Clinical Neurology. (Part 1.)
ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Prof. Alan Kekwick: Obesity.
MANCHESTER MEDICAL SOCIETY
8 P.M. (Clinical Sciences Building, York Place, Manchester, 13.) *Surgery.* Prof. A. M. Boyd: Some Experiences in Consulting Practice amidst Middle Eastern and Central European Peoples. (Presidential address.)

Wednesday, 9th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine.* Dr. R. W. Gilliatt: Nerve Pressure Syndromes.
WEST LONDON HOSPITAL MEDICAL SCHOOL, Wolverton Gardens, W.6
5.15 P.M. Mr. A. L. d'Abreu: A Decade of Cardiac Surgery. (Alex Simpson Smith lecture.)
POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12
2 P.M. Dr. F. V. Flynn: Electrolytes (I).
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.1
4 P.M. Dr. Louis Zizine (Paris): Endocrine Problems of Asthma. (Bengué lecture.)
INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. F. P. Lee Lander: Eosinophilia and Lung Disease.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Henry Haber: Normal Skin, Anatomy, and Function of Epidermis.
EUGENICS SOCIETY, 69, Eccleston Square, S.W.1
5.30 P.M. (Royal Society, Burlington House, Piccadilly, W.1.) Dr. C. P. Blacker, Mrs. Margaret Pyke (proposers); Captain R. A. Pilkington, M.P., Mr. Peter R. Cox, F.I.A. (opposers): That the Population of the United Kingdom should be Stabilised at Forty Millions.
MANCHESTER MEDICAL SOCIETY, Medical School, University of Manchester
4.30 P.M. *Medicine.* Dr. E. Howard Kitching: New Drugs in Psychiatry.

Thursday, 10th

ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Prof. P. R. Allison: Problem of Bleeding Gastro-œsophageal Varices. (Cecil Joll lecture.)
ROYAL SOCIETY OF MEDICINE
5 P.M. *Ophthalmology.* Mr. J. R. Wheeler: The Ageing Eye. (Presidential address.)
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. M. B. MacKenna: Sebaceous Glandular System.
SOCIETY OF APOTHECARIES OF LONDON, Apothecaries' Hall, Black Friars Lane, Queen Victoria Street, E.C.4
5.30 P.M. Dr. Maurice Campbell: Results of Surgical Treatment in Congenital Heart Disease. (Joseph Strickland Goodall lecture.)

Friday, 11th

POSTGRADUATE MEDICAL SCHOOL
2 P.M. Mr. William Gissane: Surgical Problems in the Treatment of the Seriously Injured.
4 P.M. Dr. J. N. Morris: Epidemiology of Coronary Heart Disease.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
3.30 P.M. Mr. Kenneth Rotter: Causes and Investigation of Nasal Bleeding.
INSTITUTE OF NEUROLOGY
5.30 P.M. Prof. Mogens Fog (Copenhagen): Unconsciousness—a Clinicopathological Study.

Notes and News

WORLD MENTAL HEALTH YEAR

1960 has been designated as a World Mental Health Year by the World Federation for Mental Health. Work will begin in 1959 and may continue into 1961, but 1960 will be the period of major effort. The numerous activities planned include:

Training of groups to undertake coördinated surveys of the occurrence and causes of all types of mental and emotional ill health.

Study of causes which may be preventable through education or community action.

Increased efforts to study the development of good "positive" health and human relations whatever the interpretation of these may be in different cultures.

Stimulation of activities within countries all over the world.

Dr. Brock Chisholm, formerly director-general of the World Health Organisation, has succeeded Dr. Margaret Mead as president of the Federation, and under his presidency next year's annual meeting, to be held in Vienna, will take as its theme the world-wide problems of refugees. The Federation now has 110 member associations in 44 countries.

CHARING CROSS HOSPITAL AND FULHAM HOSPITAL

Fulham and Kensington Hospital Management Committee has protested at the manner of the Ministry of Health's proposal that as from April 1, 1958, Fulham General Hospital and Fulham Maternity Hospital, together with the West London Hospital, should be administered by the Charing Cross Hospital Board of Governors and that eventually Charing Cross Hospital and Medical School should be rebuilt on the Fulham Hospital site.[1] In a statement to the press the committee complains that there were no preliminary discussions between the interested parties, and the premature announcement to the press occasioned dismay and indignation among the members of the committee, the hospital staff, and the people of Fulham. The committee suggests that the Ministry should give an assurance that: (1) the hospital services for the Fulham area will be at least comparable with those envisaged in the plans already drawn up for rebuilding Fulham Hospital, and those provided at the West London Hospital and Fulham Maternity Hospital, particularly in relation to chronic-sick and mental-observation cases; and (2) the interests of the hospital and group staff involved in the proposed changes will be safeguarded. The committee remarks that the Ministry has already agreed that Fulham Hospital should be completely rebuilt, and demolition work preparatory to the building of a new outpatient department has already started. The statement continues: "It is clear that the needs of the district will be more adequately met by a 600-bed hospital admitting all types of patients, acute and chronic, than by a teaching hospital of similar size with its need for more acute and 'interesting' cases. The Emergency Bed Service offered 1800 patients to Fulham Hospital last year, and nearly half of this number were admitted. It is to be expected that a teaching hospital would not be willing to accept anything approaching this number so that if the proposal is approved, other facilities would have to be made available elsewhere. The two neighbouring regional-board hospitals are already working to their fullest extent.

"It is understood that the main objection to the development of the Charing Cross Hospital site at Northwick Park is the distance from the University of London. It is pointed out that rail travel from Euston Square to Northwick Park takes precisely the same time (24 min.) as Euston Square to Barons Court. As the majority of students would use this mode of travel the objection does not appear to be valid.

"The committee therefore welcomes the suggestion in the Minister's letter that a meeting of the interested parties should be convened, and trusts that some assurance can then be given that the proposed move has not been dictated solely by the need to preserve the identity of a teaching hospital at a time when the Willink Committee is reviewing the manpower requirements of the medical profession, and that full consideration has been given to the patient demand in each area in relation to available and proposed hospital facilities."

Replying to these criticisms, the Ministry said that, with the object of enabling preliminary discussions to open, the Minister had on Aug. 2 written to the hospital boards concerned giving them an outline of the general proposal.[2] These hospital authorities were asked to submit their comments. "The Minister therefore regards this as the stage of preliminary discussion." As to the committee's reference to the premature announcement to the press, the Ministry had made no such announcement.

1. See *Lancet*, Aug. 24, 1957, p. 394.

CANADIAN JOURNAL OF SURGERY

THE Canadian Medical Association, 150, St. George Street, Toronto 5, Ontario, announce that on Oct. 1 the first issue will appear of a quarterly *Canadian Journal of Surgery*. There will be original articles, editorials, and book reviews, and a historical section. Some articles will be in French, some in English; each will have a summary in the other language. The subscription for the first year will be $10.

AN ANALYST'S LIFE

A PSYCHO-ANALYST and an experienced writer, Dr. Charles Berg has combined his skills to fashion an autobiography[3] that reveals some of the unconscious dynamism which has shaped his career. His title is derived from Georg Groddeck's dictum that the life of the individual is "lived by the It," the latinised form of which, the Id, is more familiar from Freud's writings.

The book is, however, more than the case-history of a talented and successful professional man, for Dr. Berg is well aware of the important part played by the influences of his parents, schooling, and social environment in determining the form which the dynamic impulses within him have taken for their expression. The account of his early life, of the attacks of neuralgia from which he periodically suffered until he underwent his training analysis, his student days, a tender, platonic love-affair, and a happy courtship and marriage, his life in general practice, his training in psychoanalysis, and his later professional life, make fascinating reading. Throughout, we are given brief illustrative case-histories of various patients, interesting on the anecdotal level but illuminated by analytical insight into the deeper psychological motives.

LLOYD GEORGE'S AMBULANCE WAGON

UNDER this title, which may puzzle younger readers, the memoirs of W. J. Braithwaite[4] deal with the preparation and passage into law of the National Health Insurance Act of 1911. An introduction by Sir Henry Bunbury gives the political and social background in the first decade of the century. Lloyd George, though no Socialist, was no supporter of the laissez-faire attitude of the nineteenth century, and his National Insurance Act laid the foundation of the Welfare State. A short commentary by Prof. Richard Titmuss—informative but not light reading—discusses the relationship of national insurance and social policy.

Braithwaite entered the Civil Service in 1898 after a distinguished academic career at Winchester and New College, Oxford. There are many excerpts from Braithwaite's contemporary diaries and letters, but the main memoirs were written about 1935, well over twenty years after the events they describe, and not long before his death. They are intensely interesting, for the light they shed on the genesis of the Insurance Act, and particularly on the part played by many notable politicians and Civil Servants—above all, Lloyd George. It is fashionable in many newspapers to decry Civil Servants as examples of ineptitude and idleness: these memoirs show the astounding tempo of Braithwaite's work in producing, within six months and from scratch, a scheme for compulsory national insurance. When the Act had been passed, Braithwaite, then aged only 36, who had borne the heat of the day in its preparation, found himself relegated to a relatively unimportant position, and presently he was transferred to the Inland Revenue, a disappointed and embittered man.

The memoirs do not deal in any detail with the battle between Lloyd George and the B.M.A., but they shed fascinating and not always creditable sidelights on the politicians of all parties and many distinguished Civil Servants, now almost all dead. Those old enough to remember the stirring times of bitter political controversy in the pre-1914 years will particularly enjoy this book.

2. *Times*, Oct. 1, 1957.
3. Being Lived by my Life. By CHARLES BERG, M.D., D.P.M. London: Allen & Unwin. 1957. Pp. 256. 21s.
4. Lloyd George's Ambulance Wagon: The Memoirs of William J. Braithwaite, C.B. Edited by Sir Henry Bunbury. London Methuen. 1957. Pp. 350. 30s.

University of Durham

On Sept. 28 the degrees M.B., B.S., were conferred on Phyllis M. Fleury in absentia.

University of Adelaide

Dr. R. F. Whelan, lecturer in physiology in the Queen's University, Belfast, has been appointed to the chair of human physiology and pharmacology in the university.

Royal College of Surgeons of England

On Thursday, Oct. 10, Prof. P. R. Allison will deliver a Cecil Joll lecture on the problem of bleeding gastro-œsophageal varices. On Thursday, Oct. 31, Prof. Joseph S. Barr will give a Robert Jones lecture on arthroplasty of the hip. On Thursday, Nov. 14, Sir Cecil Wakeley will deliver a Thomas Vicary lecture. His subject will be Surgeons and the Navy. All three lectures will be given at 5 P.M. at the college, Lincoln's Inn Fields, London, W.C.2.

Royal College of Physicians of Edinburgh

The Morison lecture to be delivered by Dr. W. Ritchie Russell will now take place on Friday, Oct. 25 (instead of Oct. 24).

King's College Medical School, Newcastle

On Oct. 14 and 16, Dr. Erik Strömgren, professor of psychiatry in the University of Aarhus, will give two lectures at this school on the planning of the psychiatric services in Denmark, and on Oct. 18 he will give a lecture on psychogenic psychosis. All the lectures will be given at 5.15 P.M. at the Royal Victoria Infirmary, Newcastle upon Tyne, 1.

Appointments at the Ministry of Health

Mr. Derek Walker-Smith, the Minister of Health, has appointed Mr. P. Benner as his principal private secretary, and Mr. T. E. Nodder as his assistant private secretary. Mr. Richard Thompson, parliamentary secretary to the Ministry, has appointed Mr. J. P. Cashman to be his private secretary.

Medical Education in South Africa

According to *The Times* (Sept. 26), the Medical Council of South Africa have appointed a committee to give evidence to the commission which is to make recommendations on the Government's Separate Universities Bill, which proposes separate university colleges for non-Europeans. Prof. I. Gordon, dean of the medical faculty in Natal University, said that the committee were concerned only with the provisions which might threaten medical education in South Africa. He was convinced that the Bill would create impossible conditions.

St. George's Hospital Medical School, London

In his inaugural address on Sept. 27, entitled Termites in Closed Shops, Dr. J. F. Lockwood, vice-chancellor of London University, said that specialisation might lead people deeper and deeper into a narrow world where they might miss the chance of leading a full life. He did not believe that the addition of courses in general culture offered a solution: culture of that kind could not be grafted on to a man but must really derive from the man himself and reflect his attitude to his work and to life.

Dr. Alastair Hunter, the dean, said that the recently established medical and surgical units were already having a stimulating effect. Clinical work at the Grove Hospital at Tooting was proving immensely valuable in giving students the opportunity of seeing medicine in a hospital serving a populous district. The work of rebuilding and modernisation was progressing well and was likely to be fairly near completion at the beginning of the next year. Speaking of the challenge of the General Medical Council's new recommendations on the curriculum, Dr. Hunter welcomed the relaxation of detailed proposals for the curriculum but felt that some modification of the examination system would be needed to give full effect to the Council's hope that teaching should seek to educate more and to instruct less. The examinations provided the incentives to learning, and students found it very hard to believe that they would do better by thinking about their patients than by reading textbooks. There was just a particle of truth in the suggestion that the clinical period was divided in students' minds into three wholly unrelated phases—fulfilling the statutory appointments; passing the finals; and then, as a postgraduate, learning medicine.

Leeds School of Medicine

The annual dinner for past and present students will be held at the Griffin Hotel, Boar Lane, Leeds, on Friday, Nov. 8, at 7.30 P.M., under the presidency of Mr. G. W. Black.

N.A.P.T. Commonwealth Chest Conference

This conference will be held from July 1 to 4, 1958, in the Royal Festival Hall, London. Further particulars may be had from the press officer, N.A.P.T., Tavistock House North, Tavistock Square, London, W.C.1.

United Hospitals Choir

This choir is to give a concert at 8 P.M. on Thursday, Oct. 31, at the church of St. George-the-Martyr, Queen Square, London, W.C.1. Programmes (3*s.* 6*d.*) may be had from Miss J. Magrath, 18, West Side, Clapham Common, S.W.4.

St. Thomas's Hospital, London

The old students' dinner will be held at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2, on Friday, Nov. 8, at 7.30 P.M. The chair will be taken by Dr. Geoffrey Fildes. Tickets (price £1 11*s.* 6*d.*) may be had from the honorary secretaries at the Medical School.

Glasgow University Club, London

The annual dinner of this club will be held at the Trocadero Restaurant, W.1, at 7.30 P.M. on Thursday, Nov. 7. The chairman will be Mr. R. A. Butler, the lord rector. Sir Hector Hetherington, the principal, will be present. Graduates who are not members of the club should write to Dr. J. F. Heggie, department of pathology, North Middlesex Hospital, N.18.

Abortion Law Reform Association

The annual general meeting will be held at the Caxton Hall (Lancaster room) on Wednesday, Oct. 30, at 6.30 P.M. At a public meeting, beginning at 7.15, Mrs. Lena Jeger, M.P., will speak on Family Planning in China.

In its report for 1956–57, the association expresses surprise "that some individuals and societies still declare that the medical profession is now doing all that is necessary" to combat the evil of illegal operations. It holds that the urgent need for legal change has been established by authoritative inquiry. Mr. Basil Bonner has succeeded Mrs. Dorothy Thurtle as chairman of the executive, and Mrs. M. S. Garrett (18, Wyatt Park Road, London, S.W.2) has succeeded Mrs. Alice Jenkins as secretary.

Henry Robinson Scholarships at Epsom College

The council of Epsom College announces for competition in June, 1958, a scholarship of £250 per annum open solely to the sons of registered male or female medical practitioners, living or deceased. The scholarship is to be named after Dr. Henry Robinson, who for the past twenty years has been hon. secretary of the Medical Insurance Agency, which is providing the scholarship from its profits.

The award will be made on the results of an examination without any means test. Should two candidates of exceptional merit present themselves, two scholarships, each of £250, may be awarded. Should the best candidate be of but moderate ability, a scholarship of less than £250 may be offered. In the case of a day-boy, the "ceiling" of the scholarship will be £150 per annum. Candidates must be under the age of 14 on Jan. 1, 1958; boys under 13 on that date will have their marks augmented by an appropriate proportion.

Further Henry Robinson scholarships of like amounts will be available in subsequent years. Particulars may be had from the Headmaster, Epsom College, Epsom, Surrey.

King's College Hospital Medical School, London

At the opening of the 128th session on Sept. 27, Sir Gordon Gordon-Taylor painted a glowing picture of Sir William Fergusson, whom he described as the greatest practical surgeon of his day. Fergusson accepted the professorship of surgery at King's College in 1840, at the early age of 32, and held it for 37 years.

Dr. Vernon Hall, the dean, speaking of Sir Cecil Wakeley's retirement from the active teaching staff, said that over the last 35 years his forceful and enthusiastic teaching and his obvious interest in their welfare had been an inspiration to students at King's. In the extension of the medical school stage I was now almost complete and the university had undertaken to meet the full cost of stage II. The building would be ready in a year.

176 past and present students attended the annual dinner on Sept. 28, when Dr. Terence East presided and Dr. F. Brockington proposed his health.

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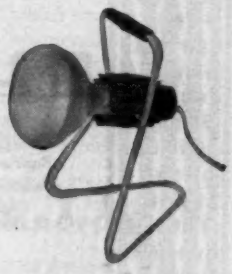

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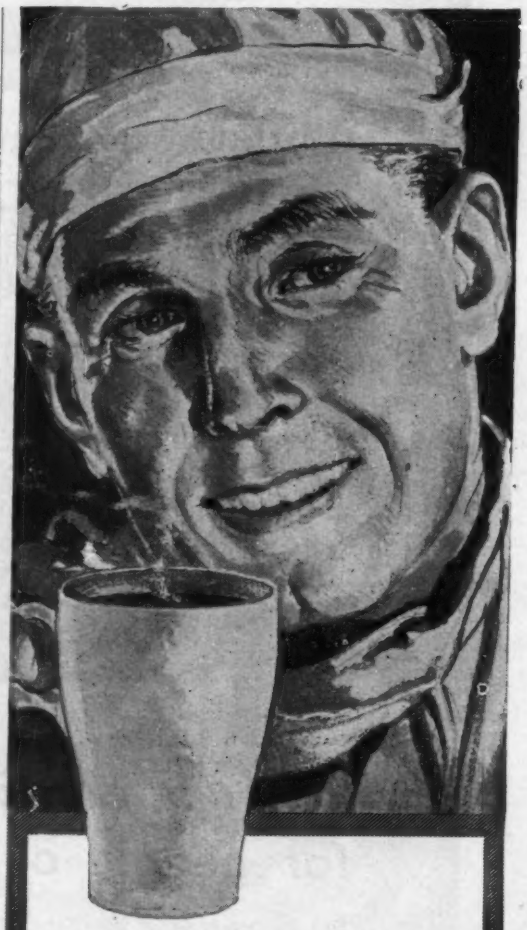

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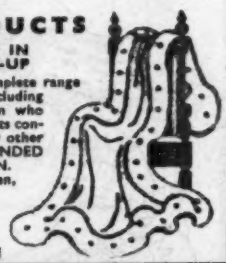

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Academic and Educational

EXAMINING BOARD IN ENGLAND
by the
ROYAL COLLEGE OF PHYSICIANS OF LONDON
and the
ROYAL COLLEGE OF SURGEONS OF ENGLAND

Notice is hereby given that the following EXAMINATIONS will commence on the dates stated below :—

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE
6th November
DIPLOMA IN ANÆSTHETICS
14th November
DIPLOMA IN PSYCHOLOGICAL MEDICINE
28th November
DIPLOMA IN LARYNGOLOGY AND OTOLOGY
5th December
DIPLOMA IN PUBLIC HEALTH
12th December

Applications and fees for either or both Parts of an Examination must reach the Secretary, Examination Hall, Queen-square, London, W.C.1, at least 21 days before Part I of the Examination begins.
FRANCIS M. STENT, Secretary.

UNIVERSITY OF LONDON

The HEATH CLARK LECTURES entitled "Psychiatry and the Public Health" will be delivered by Prof. G. R. HARGREAVES (Leeds) at 5 P.M. on 14TH, 15TH, 16TH, 17TH, and 18TH OCTOBER at the London School of Hygiene and Tropical Medicine, Keppel-street, Gower-street, W.C.1.
Admission free, without ticket.
JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF LONDON

A LECTURE entitled "The Ultra-Structure of Bone and Calcified Dental Tissues" will be delivered by Dr. R. FRANK (Strasbourg) at 5 P.M. on 15TH OCTOBER at the Institute of Dental Surgery, Eastman Dental Hospital, Gray's Inn-road, W.C.1.
Admission free, without ticket.
JAMES HENDERSON, Academic Registrar.

THE UNIVERSITY OF LIVERPOOL
DEPARTMENT OF STUDIES IN PSYCHOLOGICAL MEDICINE

POSTGRADUATE INSTRUCTION IN PSYCHOLOGICAL MEDICINE

A COURSE designed for those studying for a Diploma in Psychological Medicine will commence in JANUARY, 1958. Instruction will be part-time and will occupy approximately 3 half-days a week during 6 academic terms ; 3 terms being devoted to Part I and 3 terms to Part II. Students may enrol for either part separately, but, except in special circumstances, will not be permitted to study for both parts concurrently.
Fees : £12 12s. per term or £70 for the whole course.
Further particulars may be obtained from the Director, Department of Studies in Psychological Medicine, 77, Bedford-street South, Liverpool, 7, to whom application for admission to the course should be sent as soon as possible.

UNIVERSITY OF MANCHESTER
DEPARTMENT OF EDUCATION OF THE DEAF

A COURSE for Health Visitors and other suitable persons working with children, on the theory and practice of screening tests of the hearing of babies and children of pre-school age, will be held in the Department of Education of the Deaf, University of Manchester, from 28TH to 30TH JANUARY, 1958, inclusive. Applicant's fee of £2 2s. for each member of the course will be payable to the Bursar.
Applications should be made to the Director, Department of Education of the Deaf, The University, Manchester, 13.

UNIVERSITY OF MANCHESTER
DEPARTMENT OF EDUCATION OF THE DEAF

A COURSE for a limited number of medical officers engaged in the Public Health Service, will be held in the Department of Education of the Deaf, The University, Manchester, from 11TH to 14TH FEBRUARY, 1958, inclusive. Subjects of the course will include the principles and practice of screening tests of hearing, procedures for the assessment of residual capacity to hear in young children, and home guidance of the parents of deaf children. A fee for the course will be £4 4s.
Applications should be made to the Director, Department of Education of the Deaf, The University, Manchester, 13.

COURSE IN ADVANCED MEDICINE

A POSTGRADUATE COURSE IN MEDICINE will be held at The London Hospital commencing MONDAY, 6TH JANUARY, and finishing FRIDAY, 14TH MARCH, 1958. Classes will be held on Mondays, Wednesdays and Fridays. The course will be limited to 24 students.
The fee for the course will be £25. An entrance fee of £5 5s. must be paid by Non-London Hospital Graduates.
Applications should be made to the Dean.
H. B. MAY, M.A., M.D., F.R.C.P., Dean.
The London Hospital Medical College, Turner-street, E.1.

THE UNIVERSITY OF LIVERPOOL. Department of STUDIES IN PSYCHOLOGICAL MEDICINE. Applications are invited for the post of RESEARCH ASSISTANT IN PSYCHOLOGICAL MEDICINE at a salary within the range £1000–£1300 p.a., according to qualifications and experience. The appointment will be tenable for 1 year and may be renewed for a second year.
Applications, stating age, academic qualifications and experience, together with proposed subjects of research and the names of 3 referees, should be received not later than 19th October, 1957, by the Registrar, from whom further particulars of the conditions of appointment may be obtained.

McGILL UNIVERSITY, MONTREAL

TRAINING IN PSYCHIATRY

The Department of Psychiatry, McGill University, Montreal, has a limited number of openings for training, and applications are now being considered for 1ST JULY. Applicants must have graduated from an approved medical school and have had a general internship of 1 year.
The 4-year DIPLOMA COURSE provides general basic preparation during the first 2 years. These last 2 years provide special patterns of instruction for those : (*a*) planning to enter the field of general hospital, community or university psychiatry ; (*b*) preparing themselves for a career in child psychiatry ; (*c*) intending to enter the field of research psychiatry. Credit may be allowed for previous training. Shorter periods of instruction may be arranged, as well as instruction in special fields. Full training in psychoanalysis also may be undertaken within the Department of Psychiatry by suitably prepared candidates. Separate application for this training is required.
All those accepted for training are assigned to 1 of the 7 teaching centres in Montreal. These positions carry with them board and lodging, or, in lieu of lodging, a living-out allowance together with an honorarium ranging from $60 to $150 a month, depending upon the clinical position to which the applicant is assigned. For those in the advanced years of the course, clinical positions carrying higher salaries are available. In several centres, additional emoluments of $1800 a year are available, mainly in the form of bursaries, these being issued under certain conditions in regard to which information will be given on request.
Applicants should write to the Chairman of the Department of Psychiatry, McGill University, Montreal, Canada.

THE ROYAL SOCIETY

SCIENTIFIC PUBLICATIONS GRANTS

Applications for grants from the second allotment of the Government Grant for Scientific Publications for the year 1957 should be made as soon as possible. No application can be considered which is received later than 15TH NOVEMBER, 1957. This grant is provided for the assistance of scientific publications in the United Kingdom, particularly but not exclusively those of scientific societies and institutions of a national character. A small part of the grant is available for the assistance of the libraries of scientific societies. Applications are receivable only from societies and institutions in the United Kingdom and individuals of British nationality.
Applications will be considered at the same time for grants from funds made available by the Wellcome Trust for the support of publications dealing with research in the field of medical and allied sciences.
Forms of application may be obtained from the Assistant Secretary, The Royal Society, Burlington House, London, W.1.

UNIVERSITY OF CAPE TOWN/PROVINCIAL ADMINISTRATION OF THE CAPE OF GOOD HOPE. Joint Medical Staff. Applications are invited for the post of LECTURER IN ANATOMY. The appointment will be made under the terms of the Joint Staff Agreement between the University of Cape Town and the Provincial Administration of the Cape of Good Hope. The successful candidate will take part in the theoretical and practical teaching of medical students and of medical auxiliaries. The salary is £1860 p.a. plus a temporary cost-of-living allowance for a married man (at present £234 p.a.).
Applicants should state age, qualifications, experience, publications, and research interests and give the names of 2 referees whom the University may consult. 2 copies of the application must reach the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1 (from whom a memorandum giving the conditions of appointment and information about the department should be obtained), not later than 7th November, 1957. A third copy must be sent by air-mail to the Registrar, University of Cape Town, Private Bag, Rondebosch, C.P., South Africa, by the same date.
The University reserves the right to appoint a person other han one of the applicants or else to make no appointment.

UNIVERSITY OF KHARTOUM. Applications are invited for (*a*) SENIOR LECTURESHIP or (*b*) LECTURESHIP IN ANATOMY. Salary scales (*a*) £S1902–£S75–£S2277 p.a. ; (*b*) £S1402–£S75–£S1927 p.a. Cost-of-living allowance approximately £S100 p.a. Outfit allowance £S50. Family allowances : wife £S60 p.a., first child £S90 p.a., second and third child £S30 p.a. each. Passages for appointee and family on appointment, termination and annual leave. Superannuation Scheme. Candidates for these posts may apply for secondment from the National Health Service for a period of up to 3 years under the terms of circular letter No. RHB/(52) 106BG/(52) 101 of 30th September, 1952.
Detailed applications (8 copies), naming 3 referees, by 15th November, 1957, to Secretary, Inter-University Council for Higher Education Overseas, 29, Woburn-square, London, W.C.1, from whom further particulars may be obtained.

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.
(1) CHILD PSYCHIATRIST (7 half-days a week), Senior Hospital Medical Officer grade, Willesden Child Guidance Centre, 22, Brondesbury-villas, Kilburn, N.W.6 (Tel. : MAIda Vale 0621).
Applications before 8th November, 1957.
(2) CONSULTANT PSYCHIATRIST (part-time, 3 half-days a week), Marlborough Day Hospital, 38, Marlborough-place, St. John's Wood, N.W.8.
Applications before 4th November, 1957.
Hospital and Centre may be visited by direct appointment.
Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland-place, W.1.

EPPING GROUP HOSPITAL MANAGEMENT COMMITTEE. OPHTHALMOLOGIST required for children's refraction clinics at Ongar, Essex (1 session monthly), and at Epping, Essex, (2 sessions monthly), Senior Hospital Medical Officer grade.

Further information can be obtained from the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, to whom application should be made as soon as possible.

LEEDS REGIONAL HOSPITAL BOARD. Consultant in Orthopædic Surgery (maximum part-time sessions). Duties at hospitals in the Hull A and East Riding Groups (mainly at Hull Royal Infirmary). 2 hours per week devoted to School Clinic Work. Person appointed to reside in Hull.

Applications (12 copies), stating age, qualifications and details of present and previous appointments with dates, and names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 21st October, 1957.

LEEDS REGIONAL HOSPITAL BOARD.

CONSULTANT in Radiology (whole-time or maximum part-time). Duties divided approximately equally between hospitals in the York A and Tadcaster and the Scarborough, Bridlington, Malton and Whitby Hospital Management Committee Groups. The successful applicant will be required to reside in Scarborough.

Part-time CONSULTANT in Dentistry (2 sessions per week) for duties mainly at Clayton Hospital, Wakefield, together with additional duties at other hospitals in the Wakefield, Pontefract, Dewsbury and Goole areas.

Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer scale), Storthes Hall Hospital (2680 Beds), Kirkburton, near Huddersfield, and associated clinics at neighbouring general hospitals. Resident or non-resident. Large modern flat available if required. Accommodation also available for a single person. Candidates should normally hold a D.P.M. but applications will also be considered from candidates without previous experience in psychiatry who hold a higher medical qualification, have had wide experience in general medicine in the Senior Registrar grade and intend to obtain a D.P.M. and specialise in psychiatry.

Whole-time ASSISTANT RADIOTHERAPIST (Senior Hospital Medical Officer scale) in the Regional Radiotherapy Service for duties mainly at the Hull Royal Infirmary. Relief duties as may be required at other Radiotherapy Centres in the Region. The person appointed to work under the supervision of the Consultant in Radiotherapy and to reside in the Hull area.

Applications (12 copies), stating age, qualifications and details of present and previous appointments with dates, and name and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 21st October, 1957.

LIVERPOOL REGIONAL HOSPITAL BOARD. Applications are invited for the post of ASSISTANT PLASTIC SURGEON (Consultant). Duties will be to assist the existing Senior Plastic Surgeon (Mr. R. P. Osborne) and will be mainly at Whiston, Alder Hey Children's and Leasowe Children's Hospitals. In addition the person appointed will be required to attend at other hospitals in the Region and to conduct outpatient clinics at peripheral hospitals. Applicants must possess a Fellowship of the Royal College of Surgeons of England, Edinburgh or Ireland, and have had considerable experience of plastic surgery. Preference will be given to applicants who have special orthopædic experience. The post is tenable from 1st April, 1958, and will initially be whole-time but after 3 years service the Board will be prepared to consider an application to amend this appointment to maximum part-time sessions.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 26th October, 1957.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. Liverpool RADIUM INSTITUTE. Applications are invited for the post of Part-time CONSULTANT GENERAL SURGEON, giving 1 notional half-day per week at the above Hospital. Applicants must have wide experience in the specialty and possession of a higher qualification in general surgery is essential.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 26th October, 1957.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. Liverpool REGION CHILDREN'S GROUP. Applications are invited for the post of Whole-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer) in the above Group with duties mainly at Alder Hey Children's Hospital. Applicants should have general all-round experience in clinical pathology. The possession of a higher qualification in pathology and pædiatric experience will be considered an advantage. The successful candidate will work under the guidance of the Senior Group Pathologist.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 26th October, 1957.

VINCENT COLLINGE, Secretary to the Board.

MANCHESTER REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT PATHOLOGISTS (Senior Hospital Medical Officer grade) to :—

(i) Preston and Chorley Group of hospitals, mainly at Preston Royal Infirmary.

(ii) Oldham and District Group of hospitals, mainly at the Oldham and District General Hospital.

Experience in all branches of hospital pathology desirable; successful candidates will work under the general guidance of Consultant and will be required to live near their main hospitals.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 21st October, 1957.

NEWCASTLE REGIONAL HOSPITAL BOARD. East CUMBERLAND GROUP OF HOSPITALS. ANÆSTHETIST (Senior Hospital Medical Officer scale), whole-time or maximum part-time for East Cumberland Group of hospitals. Main hospitals Cumberland Infirmary, Carlisle (340 Beds), City General Hospital, Carlisle (180 Beds). The appointee will be required to reside in or within 5 miles of Carlisle.

Applications, together with names of 1–3 referees, to be sent to the Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Locum SENIOR CASUALTY OFFICER (whole-time), South West Durham Group of hospitals. Main hospital, Bishop Auckland General (365 Beds) for approximately 1 month. Accommodation available.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, immediately.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT ORTHOPÆDIC SURGEON required for Bretby Hall Orthopædic Hospital and associated clinics. Salary scale £1653 15s.–£52 10s.–£2126 5s.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 26th October, 1957.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Whole-time or maximum Part-time CONSULTANT ANÆSTHETIST for duties mainly in the Portsmouth Group of hospitals. The successful candidate will also be required to undertake approximately 2 half-days per week at the Royal National Hospital, Ventnor, Isle of Wight. Experience in anæsthesia for thoracic surgery is essential and a knowledge of the respiratory treatment of poliomyelitis would be an advantage. Residence in or within a radius of approximately 10 miles of Portsmouth is a condition of the appointment. Canvassing will disqualify, but candidates may visit the hospitals by arrangement with the Group Secretary, St. Mary's Hospital, Milton-road, Portsmouth, and the Group Secretary, Royal National Hospital, Ventnor, Isle of Wight.

Applications (7 copies), stating age, qualifications and experience, and the names and addresses of 3 referees, to the Area Secretary, Highcroft, Romsey-road, Winchester, by 24th October, 1957.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a CONSULTANT in Orthopædics (7 half-days per week) for the Salisbury Group of hospitals. The main duties will be at the Salisbury General and Odstock Hospitals. Candidates must have had wide experience in orthopædic work and should possess higher qualifications. Residence in or within a radius of approximately 10 miles of Salisbury is a condition of the appointment. Canvassing will disqualify, but candidates may visit the hospitals by arrangement with the Group Secretary, Odstock Hospital, Salisbury, Wilts.

Applications (7 copies), stating age, qualifications and experience, and the names and addresses of 3 referees, to the Area Secretary, Highcroft, Romsey-road, Winchester, by 24th October, 1957.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Whole-time or maximum Part-time CONSULTANT PATHOLOGIST for the Winchester and Lord Mayor Treloar Groups of hospitals. The main duties will be at the hospitals in Alton and will include the general supervision of the laboratories at the Lord Mayor Treloar and Alton General Hospitals. The person appointed will be in regular contact with the main laboratory at the Royal Hampshire County Hospital, Winchester, where he will undertake work primarily in Biochemistry. Residence in the area between Winchester and Alton is a condition of the appointment. Canvassing will disqualify, but candidates may visit the hospitals by arrangement with the Group Secretary, Royal Hampshire County Hospital, Romsey-road, Winchester, and the Group Secretary, Lord Mayor Treloar Hospital, Alton, Hants.

Applications (7 copies), stating age, qualifications and experience, and the names and addresses of 3 referees, to the Area Secretary, Highcroft, Romsey-road, Winchester, by 24th October, 1957.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens CONSULTANT RADIOLOGIST required Cardiff Hospital Management Committee area immediately for a period of approximately 3 months.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

U.S.A. NORTH CAROLINA SANATORIUM, McCain, NORTH CAROLINA, U.S.A. Required, PHYSICIANS for full-time employment in 600-Bed Chest Disease Hospital. Salary: Physician I, $7884–$9396; Physician II, $9360–$11,040. Attractive living accommodations for family and single persons at reasonable cost. Hospital affiliated in residency training programmes in medicine and surgery. Located in Central North Carolina, within easy driving range of mountain and seashore resort areas. Year round mild climate. Liberal vacation and sick leave. Retirement and insurance programmes available. Must speak English. Appointments available for 1st January and 1st July, 1958.

Write: Assistant Medical Director.

Hospital Services : Junior Appointments

BRITISH HOSPITAL FOR MOTHERS AND BABIES, Samuel-street, Woolwich, S.E.18. OBSTETRICAL HOUSE OFFICER, vacant 2nd November. Recognised for D.Obst. R.C.O.G. and M.R.C.O.G. approved for Pre-registration Service. Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT SENIOR HOUSE OFFICER required for Casualty Department, successful candidate will work under supervision of Orthopædic and Traumatic Specialist. Appointment for 6 months from 1st November, 1957.

Applications, with names of 2 referees or copies of testimonials, to Medical Director by 12th October.

CHARING CROSS HOSPITAL, W.C.2. Locum Resident SENIOR HOUSE OFFICER required in the Casualty Department from 5th October to 1st December, 1957, inclusive. During 2 weeks of this period the post will be non-resident.

Applications to the House Governor (Telephone No. TEMple Bar 7788).

CONNAUGHT HOSPITAL, Walthamstow, E.17. (123 Beds.) Applications are invited for the post of SECOND CASUALTY OFFICER with duties in the Department of Orthopædic and Traumatic Surgery (Senior House Officer grade). Recognised for F.R.C.S. Salary £819 10s. p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

DREADNOUGHT SEAMEN'S HOSPITAL, Greenwich, S.E.10. HOUSE SURGEON (pre-registration) required on 6th November.

Applications, stating age, nationality, qualifications and experience, and giving the names of 3 recent referees, should be sent to the Secretary at the above address not later than 19th October.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from registered Women medical practitioners for the post of Full-time SURGICAL REGISTRAR (non-resident). Recognised for the F.R.C.S. examination. Appointment for 1 year in the first instance, to commence 1st January, 1958. Salary in accordance with Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 17th October, 1957.

FULHAM HOSPITAL, St. Dunstan's-road, Hammersmith, W.6. (414 Beds. Recognised for the D.A.) SENIOR HOUSE OFFICER (resident) in Anæsthetics. The post offers experience in anæsthetics for all types of general surgery, including an Obstetrics Unit of 30 Beds. Staff includes a full-time Registrar.

Applications, on forms obtainable from Hospital Secretary (L.88), as soon as possible.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6 months Resident House Officer appointments of :—

(*a*) CASUALTY OFFICER AND HOUSE SURGEON (E.N.T.), now vacant.

(*b*) CASUALTY OFFICER AND HOUSE PHYSICIAN (Skin Department), now vacant.

Applications should be sent immediately to Secretary, above address, quoting C.O. (*a*) or (*b*).

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Applications are invited from pre-registration or registered medical practitioners (Male) for the appointment of HOUSE SURGEON, to become vacant on Thursday, 7th November. This post is recognised for purposes of the F.R.C.S. (Eng.). Appointment will be for a period of 6 months. National Health Service salary.

Applications should reach the Secretary on or before Wednesday, 23rd October, together with copies of 3 recent testimonials.

KING EDWARD MEMORIAL HOSPITAL, Ealing, Perivale MATERNITY HOSPITAL, GREENFORD. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time), obstetrics and gynæcology, for duty at King Edward Memorial Hospital, Ealing (17 gynæcological beds), Perivale Maternity Hospital, Greenford (50 obstetric beds). Recognised in obstetrics by Royal College of Obstetricians and Gynæcologists for Membership. Resident at Perivale Maternity Hospital. Vacant 12th October. Candidates may visit hospitals, by appointment with Hospital Secretary (Ealing 4081).

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 15th October.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. 2 vacancies occur 1st December, 1957, for RESIDENT HOUSE PHYSICIAN. Appointment for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and posts graded as House Officer. Duties include work in the Outpatient Department and special clinics, as well as in wards.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 24th October.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. Applications are invited for the appointment of RESIDENT MEDICAL OFFICER. Appointment for 1 year from 1st December, 1957, and graded as Registrar.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should be sent to the undersigned not later than 12th October.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR REGISTRAR to the E.N.T. Department. Candidates must be Fellows of the Royal College of Surgeons.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the undersigned by 9th October, 1957. H. BRIERLEY, House Governor.

MILE END HOSPITAL, Bancroft-road, London, E.1. (484 Beds—obstetric beds 69, gynæcological beds 31.) Applications are invited for the following posts :—

SENIOR HOUSE OFFICER (obstetrics and gynæcology), vacant on 31st December, 1957.

HOUSE SURGEONS (post-registration), obstetrics and gynæcology. Vacancies on 4th November, 1957, and 15th February, 1958.

The above posts are recognised for the M.R.C.O.G.

Application forms, obtainable from Physician-Superintendent, to be returned by 18th October, 1957, with copies of not more than 3 testimonials.

MILDMAY MISSION HOSPITAL, Austin-street, Bethnal Green, E.2. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (resident). Recognised for the F.R.C.S. Vacant 9th November, 1957. The appointment is for 1 year. Salary £819 10s., less residential charges. Candidates should be in full sympathy with the evangelistic aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of REGISTRAR (whole-time) to the Lysholm X-ray Department at The National Hospital, Queen-square, W.C.1. This post carries the grade of Registrar. Applicants should hold a Diploma in Diagnostic Radiology and have had experience in general radiology. The appointment will be for 6 months in the first instance.

Applications, with names of 3 referees, to be sent to the undersigned not later than 28th October, 1957.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, London, W.C.1.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of REGISTRAR (non-resident) at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior Registrar. Previous neurological experience and higher medical qualification are desirable. The appointment will be for 1 year in the first instance.

Applications, with names of 3 referees, to be sent to the undersigned not later than 28th October, 1957.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, London, W.C.1.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. Applications are invited from registered medical practitioners for the appointment of RESIDENT PÆDIATRIC HOUSE PHYSICIAN (third post) to the above Hospital for a period of 6 months, vacant 15th November, 1957. Post recognised for D.C.H.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 19th October, 1957.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL. BERNHARD BARON MEMORIAL RESEARCH LABORATORIES. A REGISTRAR in Pathology is required at the above Laboratories. Previous specialised experience is not essential. The successful candidate will have opportunities to work in all departments, will receive specialised training in serology and later may assist in research work. The post is resident.

Applications to the House Governor at the Hospital on forms obtainable from 339, Goldhawk-road, London, W.6, within 14 days.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. CHELSEA HOSPITAL FOR WOMEN. HOUSE SURGEON (Senior House Officer), resident post tenable for 1 year from 1st December, 1957.

Applications to the House Governor by 14th October, 1957, on forms obtainable from 339, Goldhawk-road, London, W.6.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. QUEEN CHARLOTTE'S MATERNITY HOSPITAL. JUNIOR OBSTETRIC OFFICER (Senior House Officer) resident post tenable for 6 months from 1st January, 1958.

Applications to the House Governor by 14th October, 1957, on forms obtainable from 339, Goldhawk-road, London, W.6.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, BANSTEAD, SURREY. HOUSE OFFICERS (2) commencing 1st December, 1957. 1 appointment will be made for 2 consecutive periods of 6 months. First period as House Physician at Shadwell, second as House Surgeon at Banstead (3 months) and Casualty Officer at Hackney-road (3 months). The second appointment is for the same rotation of duties but all at Hackney-road.

Application forms may be obtained from the Secretary at Hackney-road, and should be returned with copies of not more than 3 testimonials on or before 14th October, 1957.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of SENIOR RESIDENT ANÆSTHETIST. Applicants must be registered medical practitioners. The appointment is for 6 months, to commence as soon as possible, with duties at the North Western Branch and Hampstead General Hospital. Salary in accordance with the Ministry of Health scale for Senior House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 12th October, 1957.

ROYAL FREE HOSPITAL, London, W.C.1. Applications are invited from registered medical practitioners for the post of Whole-time NON-RESIDENT SENIOR REGISTRAR in Bacteriology. Appointment for 1 year in the first instance, beginning on or about 1st January, 1958. Experience in bacteriology and training in clinical pathology is essential.

Applications, together with the names of 3 referees, should be sent to the Secretary to the Board of Governors, at the above address, not later than 30th November, 1957.

ROYAL LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street and Queen-square, W.C.1. Applications are invited from registered medical practitioners for the post of RESIDENT HOUSE SURGEON with care of gynæcological beds, vacant 1st December, 1957. Post tenable for 6 months. Candidates will be required to attend for interview.

Applications, stating age and full particulars, to Secretary.

ROYAL LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street and Queen-square, W.C.1. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON, vacant 1st December, 1957. Post recognised for F.R.C.S. examinations, and is tenable for 6 months. Candidates will be required to attend for interview.

Applications, stating age and full particulars, to Secretary.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from registered Women medical practitioners for the post of ANÆSTHETIC REGISTRAR (either resident or prepared to live within 20 minutes of the Hospital). D.A. desirable but not essential. Post recognised for D.A. The appointment is normally for 2 years, but subject to review at the end of 1 year, and will be vacant on 1st January, 1958. Canvassing will disqualify but candidates may visit the Hospital by arrangement.

Forms of application from the Group Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to be returned by 19th October, 1957.

ST. ANDREW'S HOSPITAL, Devons-road, Bow, E.3. HOUSE SURGEON (obstetrics and gynæcology). Recognised pre-registration post.

Applications, with copy of at least 1 testimonial, should be sent to Hospital Secretary immediately.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR. Post recognised for D.A. and F.F.A.R.C.S.

Application forms obtainable from Group Secretary, Wandsworth Hospital Group, at above address. (0617.)

ST. MARY ABBOTS HOSPITAL, Marloes-road, Kensington, W.8. HOUSE SURGEON (obstetrics and gynæcology). Post recognised for D.Obst.R.C.O.G. in Obstetrics. Appointment commences 1st November, 1957, is resident, and is limited to 6 months.

Applications by 11th October, 1957, on forms obtainable from the Hospital Secretary. (L90.)

ST. MARY'S HOSPITAL, W.2. Registrar (whole-time) to the Psychiatric Department required; previous experience in psychiatry essential and preference will be given to candidates holding the D.P.M. The appointment is for a first period of 12 months from 1st November, 1957.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and gradings of previous and present appointments, together with names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 21st October, 1957.

ST. MARY'S HOSPITAL, Paddington, W.2. Senior REGISTRAR to the E.N.T. Department of St. Mary's Hospital required. Possession of a higher surgical qualification essential. The appointment will be for a first period of 12 months, as from a date to be arranged, and the successful candidate will be eligible for re-election.

Applications, stating nationality, date of birth, permanent address, qualifications with dates and details of previous appointments with gradings, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 15th October, 1957.

ST. NICHOLAS HOSPITAL, Tewson-road, Plumstead, S.E.18. HOUSE PHYSICIAN, vacant now. Recognised for pre-registration purposes.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. OLAVE'S HOSPITAL, Lower-road, Rotherhithe, S.E.16. BERMONDSEY AND SOUTHWARK GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (general medical duties) required at above Hospital. Salary £819 10s. p.a., less appropriate deduction for board and lodging. The appointment is tenable for 12 months and may be either fully resident or resident only when on duty.

Applications, stating age, qualifications and experience together with names of 3 referees or copy testimonials, to Hospital Secretary at above address within 1 week of advert.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. RESIDENT SURGICAL OFFICER (Senior Registrar grade), required for St. Paul's Hospital on 1st December, 1957. Applications invited from Male candidates on the British register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidate should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), and the names of 3 referees, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 31st October, 1957.

WANSTEAD HOSPITAL, Hermon Hill, London, E.11. (191 Beds.) HOUSE PHYSICIAN required. Post vacant 18th November, 1957.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WEST LONDON HOSPITAL, Hammersmith-road, London, W.6. Part-time REGISTRAR (rheumatic diseases) required for 2 sessions per week (Tuesday and Wednesday mornings) from 5th November.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, the Board of Governors, the Hammersmith, West London, and St. Mark's Hospitals, Ducane-road, London, W.12, by 14th October.

WEST LONDON HOSPITAL, Hammersmith-road, London, W.6. Whole-time RESIDENT CASUALTY OFFICER (Senior House Officer grading) required for 6 months from 1st December.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to the Secretary by 14th October.

WEST LONDON HOSPITAL, Hammersmith-road, London, W.6. Whole-time NON-RESIDENT SENIOR REGISTRAR (general medicine) required. Post vacant 2nd December.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, the Board of Governors, the Hammersmith, West London and St. Mark's Hospitals, Ducane-road, W.12, by 14th October.

WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY, 91, Dean-street, W.1. Applications are invited for the full-time non-resident post of NEUROLOGICAL REGISTRAR commencing early January. Post tenable for 1 year in first instance and renewable for further year subject to review. Duties include assisting the Physicians in both the Inpatient and Outpatient Departments, acting as senior member of the junior medical staff and supervising the House Officers (Senior House Officers).

Application forms obtainable from, and returnable to, Secretary to Committee, Paddington Group Hospital Management Committee, Harrow-road, W.9, by 23rd October, 1957.

WHIPPS CROSS HOSPITAL, London, E.11. Leytonstone (NO. 10) HOSPITAL GROUP. Applications are invited for the post of SENIOR HOUSE OFFICER (pathology) at the Area Laboratory, at above Hospital. The post is normally a resident one but applications will be considered from persons wishing to be non-resident, providing that they will reside near the Hospital and be on call.

Application forms to the Hospital Secretary to be returned by 11th October, 1957.

WIMBLEDON HOSPITAL, Thurstan-road, Copse Hill, S.W.20. RESIDENT HOUSE SURGEON (not pre-registration), vacant now. Salary £577 10s. Post affords good opportunity for postgraduate training and offers excellent experience in surgery.

Applications, giving age, qualifications, &c., and names and addresses of 2 referees, to the Secretary at above address.

ALTRINCHAM GENERAL HOSPITAL. Assistant Senior SURGICAL OFFICER (Junior Hospital Medical Officer grade). Applications are invited for this post in a hospital of 130 acute beds with a busy Casualty Department. The appointee would be required to exercise control of this department and also to assist Resident Surgical Officer with the general surgical work of the Hospital. The post offers excellent opportunities of practical experience and postgraduate study to suitably qualified candidates and particularly those studying for higher surgical qualifications.

Applications, with names of 2 referees, to Group Secretary, North and Mid-Cheshire Hospital Management Committee, Sinderland-road, Altrincham, Cheshire.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER for Special Department (E.N.T., paediatrics, dermatology, &c.). 6 months appointment, vacant 6th November, 1957. Not suitable for pre-registration candidates, offers good experience before general practice.

Applications, stating age, qualifications and experience with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE- MENT COMMITTEE. 2 HOUSE SURGEONS required at Ashton-under-Lyne General Hospital. Preference will be given to pre-registration applicants. Recognised for F.R.C.S.(Eng.). 1 vacant end of October, 1 vacant middle of November.

Applications, with copies of 2 testimonials, to Group Secretary, General Hospital, Ashton-under-Lyne.

ABBOTS LANGLEY, HERTFORDSHIRE. LEAVESDEN HOSPITAL. Vacancy for JUNIOR HOSPITAL MEDICAL OFFICER, tenable for short term (2–3 years) at above Hospital, accommodating all grades of mentally defective patients. Recognised for D.P.M. 2 sanatoria for pulmonary tuberculosis. Geriatric hospital within the Group. Visited by Specialists in a number of specialties.

Applications to Physician-Superintendent, Leavesden Hospital, Abbots Langley, Herts.

BANGOR, CAERNARVON AND ANGLESEY GENERAL HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN at the above Hospital. The appointment is for a period of 6 months. Salary and conditions of service in accordance with those approved by the Ministry of Health.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be forwarded to the Group Secretary, Caernarvon and Anglesey Hospital Management Committee, Plas Gwyn, Ffriddoedd-road, Bangor, within 10 days of the appearance of this advertisement.

BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.) HOUSE SURGEON required; recognised pre-registration appointment.

Applications to Group Secretary, 19, Alexandra-road, Barnstaple.

BEDFORD GENERAL HOSPITAL. (436 Beds.) Senior HOUSE OFFICER in Medicine, now vacant, tenable for 12 months.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BRISTOL. COSSHAM AND FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for the Department of Thoracic Surgery (120 Beds) at Frenchay Hospital.

Apply to Group Secretary, Frenchay Hospital, Bristol, giving age and experience and quoting 2 referees.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. ASSISTANT PATHOLOGIST (Senior House Officer grade) required for Area Laboratory. Offers experience in all branches of pathology.

Detailed applications to Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 acute beds.) ORTHOPÆDIC HOUSE SURGEON (first, second or third post), vacant now. Offers good opportunity for general experience in busy acute general hospital. Approved pre-registration post. Fully qualified practitioners may apply. Recognised for F.R.C.S.

Apply Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) Locum ORTHOPÆDIC HOUSE SURGEON (Senior House Officer or House Officer grading according to experience).

Applications to Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) HOUSE PHYSICIAN (House Officer or Senior House Officer grading according to experience).

Apply Group Secretary.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, Birmingham, 15. (215 Beds.)

(1) REGISTRAR (surgical) for Burns Unit. Special experience available in treatment of shock, infection and principles of plastic surgery. Opportunity for Research—Unit run in conjunction with M.R.C. Previous experience not essential. F.R.C.S. advantageous.

(2) REGISTRAR (surgical). Duties with accident surgery team and possibility of transfer to Burns Unit. General surgical experience essential. Higher qualification an advantage.

Application forms from Secretary, Birmingham (Selly Oak) Hospital Management Committee, Oak Tree-lane, Birmingham, 29, to be returned by 14th October, 1957.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the appointment of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) at the Queen Elizabeth Hospital, Birmingham. There are 4 residents attached to the Department of Clinical Pathology. In addition to affording general experience in hæmatology, bacteriology, and some biochemistry, the appointment can provide opportunities for those studying for higher qualifications in medicine. The appointment is tenable for 1 year.

Application forms should be obtained from the Secretary to the Board of Governors, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS AND THE BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of NON-RESIDENT DERMATOLOGICAL REGISTRAR (Senior Registrar or Registrar grade). Duties will include sessions at the Queen Elizabeth Hospital and other units of the Teaching Hospital and at Hospitals of the Birmingham Regional Hospital Board. Candidates must be registered medical practitioners and have had previous experience in the specialty. For appointment to Senior Registrar grade, candidates should possess the M.R.C.P.

Forms of application may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned not later than 19th October, 1957.

BISHOP AUCKLAND, co. DURHAM. THE GENERAL HOSPITAL. (350 Beds.) HOUSE SURGEON required. Recognised pre-registration appointment.

Apply, naming 2 referees, to K. G. T. LUXFORD, Group Secretary, South West Durham Hospital Management Committee, at the above address.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. SENIOR HOUSE OFFICER or JUNIOR HOSPITAL MEDICAL OFFICER ANÆSTHETIST required at above Hospital. Grading according to qualifications and/or experience.

Applications, including names of 3 referees, to Group Secretary, South West Durham Hospital Management Committee, at once.

BISHOP'S STORTFORD, HERTFORDSHIRE. HERTS AND ESSEX GENERAL HOSPITAL. (386 Beds.) SENIOR HOUSE OFFICER (surgical) required for general and orthopædic surgical duties. Salary £819 10s. p.a., less £150 in respect of residential emoluments.

Further particulars from, or applications with names of 2 referees to, the Hospital Secretary.

BISHOP'S STORTFORD, HERTFORDSHIRE. HERTS AND ESSEX GENERAL HOSPITAL. (386 Beds.) Applications are invited for the post of HOUSE OFFICER (surgical), pre-registration. Salary £467 10s.–£522 10s. p.a., less £125 in respect of residential emoluments. Appointment to commence immediately. There is a pre-registration medical post for which the successful candidate will receive consideration at the termination of the surgical appointment.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials or the names of referees, to the Hospital Secretary.

BRADFORD ROYAL INFIRMARY. (507 Beds.) Senior HOUSE SURGEON (Thoracic Unit), vacant now.

Applications, stating age, experience, nationality, and qualifications with copy testimonials, to the Secretary.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (pathology) required for duties at Royal Infirmary, Blackburn (Group Laboratory); but may also be required for duties at Queen's Park Hospital, Blackburn, and Victoria Hospital, Accrington, at Consultant's discretion. Recognised for D.Path. Post vacant now.

Applications, with names of 2 referees, to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BOLTON. THE ROYAL INFIRMARY. (238 Beds.) BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER in Orthopædic Surgery. Tenable for 12 months and recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, should be sent immediately to Group Secretary, The Royal Infirmary, Bolton.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HANTS. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a RESIDENT SENIOR HOUSE OFFICER, (surgical) for the above Hospital of 334 Beds, including a new Surgical Unit of 56 Beds. The post became vacant on 1st September, 1957. There is no emergency surgery undertaken at the moment, but the successful applicant will attend surgical outpatient sessions at the Royal Victoria Hospital, Boscombe.

Applications to the Hospital Secretary, Christchurch Hospital.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, HAMPSHIRE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN at the above Hospital of 334 Beds, including new Surgical Unit of 56 Beds, 79 acute medical, 34 pædiatric, 6 chest diagnostic and geriatric ward. Duties also include attendance at outpatient clinics at Royal Victoria Hospital, Boscombe. The appointment, which is recognised for pre-registration purposes, becomes vacant on 4th November, 1957.

Applications, with copies of testimonials, to the Hospital Secretary.

BRIGHTON GENERAL HOSPITAL. Brighton and LEWES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of HOUSE PHYSICIAN to the Geriatric Unit. This is a large Unit with an active rehabilitation section, which provides excellent clinical facilities. Vacant 1st November.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elmgrove, Brighton, 7.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (312 Beds.) HOUSE SURGEON required end October. Pre-registration and recognised for F.R.C.S.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. ROSSENDALE GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology.

Apply, stating full details and names of 2 referees, to Group Secretary, Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER in Pædiatrics. The post is based upon Bury General Hospital but the successful applicant will also have duties at other hospitals in the Group. It is recognised for the examination for the D.C.H.

Apply, stating full details and names of 2 referees, to H. WILKINSON, Esq., Group Secretary, Bury General Hospital, Bury, Lancs, not later than 19th October, 1957.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH. SENIOR HOUSE SURGEON (Orthopædic and Traumatic Unit). Post now vacant. Tenable 6 or 12 months.

Applications, giving age, nationality, qualifications and experience, and names of 2 referees, to Group Secretary, Mid-Sussex Hospital Management Committee.

CAERNARVON AND ANGLESEY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for HOUSE SURGEONS at each of the following hospitals :—

LLANDUDNO GENERAL HOSPITAL, LLANDUDNO. (Recognised for F.R.C.S.)

CAERNARVON AND ANGLESEY GENERAL HOSPITAL, BANGOR. (Recognised for F.R.C.S.)

The appointments are for a period of 6 months. Salary and conditions of service in accordance with those approved by the Ministry of Health.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be forwarded to the Group Secretary, Plas Gwyn, Ffriddoedd-road, Bangor, within 10 days of the appearance of this advertisement.

CAERPHILLY HOSPITAL. (226 Beds for acute general medicine and surgery.) Pre-registration HOUSE OFFICER (orthopædics and general surgery) required at above Hospital.

Apply immediately, with names of referees, to the Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach, Glam.

CARDIFF. GLAN ELY TUBERCULOSIS HOSPITAL, FAIRWATER, CARDIFF. SENIOR HOUSE OFFICER (resident) required at above Hospital.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. ROOKWOOD HOSPITAL, Llandaff, Cardiff. SENIOR HOUSE OFFICER (medical) required. National Health Service terms and conditions.

Apply Medical Superintendent.

CARDIFF. ROYAL HAMADRYAD GENERAL AND SEAMEN'S HOSPITAL. CARDIFF HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (medical) required at above Hospital, which caters for acute general medical and surgical cases. Hospital contains acute medical unit, general surgical and genito-urinary units and outpatient facilities, also certain amount of casualty work. Consultant Staff drawn mostly from United Cardiff Hospitals. Post for 1 year and presents facilities for postgraduate study.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of REGISTRAR in Obstetrics and Gynæcology in the United Cardiff Hospitals, to commence 1st January.

Application forms are available from the Secretary to the Board at the Cardiff Royal Infirmary, Newport-road, Cardiff, and should be returned not later than 14 days after the appearance of this advertisement.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (188 Beds.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædic and traumatic surgery) (recognised by the Royal College of Surgeons), which is now vacant. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, and names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (188 Beds.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical) (recognised by the Royal College of Surgeons), which is now vacant. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience and nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General Children's Hospital of 700 Beds.) HOUSE PHYSICIAN (Senior House Officer) required, care of acute medical, rheumatism and poliomyelitis beds.

Applications, stating age, qualifications and experience, together with copies of 3 testimonials, should reach the Group Secretary by 19th October.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General Children's Hospital of 700 Beds.) HOUSE SURGEON (House Officer) (resident) required for 6 months (3 months general surgery, 3 months E.N.T. and orthopædics). Recognised for D.C.H. Applicants must have completed 12 months Pre-registration Service.

Applications, stating age and qualifications, together with 1 recent testimonial and the names of 2 referees, should be submitted to the Group Secretary, immediately.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. SENIOR HOUSE OFFICER to the Obstetric and Gynæcology Department (75 obstetric and 60 gynæcological beds). Post vacant 4th December. Experience in obstetrics and gynæcology essential; post recognised for M.R.C.O.G. Appointment for 6 months, with possibility of renewal for further 6 months.

Applications, stating age, qualifications and experience, with copies of recent testimonials and the names of 2 referees, should be sent to Group Secretary at above address.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. (733 Beds.) REGISTRAR in Obstetrics and Gynæcology (75 obstetric and 60 gynæcological beds). Post vacant 1st January.

Forms of application, returnable by 19th October, obtainable from the Group Secretary at the above address.

CHATHAM, KENT. ALL SAINTS' HOSPITAL. Medway AND GRAVESEND HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON. Applications are invited for this post, vacant now, which is recognised for Pre-registration Service. Salary £467 10s.–£577 10s. p.a., according to experience.

Applications, stating age, qualifications, nationality and experience, together with copies of 3 recent testimonials, to be addressed to the Hospital Secretary.

CHELMSFORD. ST. JOHNS' HOSPITAL. (Recognised for M.R.C.O.G.) RESIDENT GYNÆCOLOGICAL HOUSE SURGEON to commence as soon as possible. Preference will be given to candidates who intend to obtain the Diploma of Membership of the Royal College of Gynæcologists.

Applications, stating age, nationality, qualifications and experience, together with recent testimonials, should be sent immediately to the Secretary, Chelmsford Group Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON (Senior House Officer, or House Officer (Intern) grade). 100 orthopædic beds. Post recognised for F.R.C.S. and Pre-registration Service. Salary in accordance with terms and conditions of National Health Service. Post vacant 1st November, 1957.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, Chertsey, as soon as possible.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for :—

Essex County Hospital, Colchester, Essex (185 Beds)

Post of SENIOR HOUSE OFFICER to Casualty and E.N.T. Departments. Post tenable for 6 months or 1 year. Recognised for F.R.C.S.

Black Notley Hospital, Braintree, Essex (516 Beds)

Post of HOUSE OFFICER (orthopædic surgery). Duties include care of cases from London Hospital Orthopædic Department. First, second, third, or pre-registration post, tenable for 6 months. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COVENTRY AND WARWICKSHIRE HOSPITAL. Senior HOUSE OFFICER (fracture and orthopædics), resident, vacant end of October. Recognised F.R.C.S.

Applications to Group Secretary, Coventry and Warwickshire Hospital, Coventry.

CHESTERFIELD HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER required 14th October at Whittington Hall, Chesterfield (356 Beds for female mentally deficient patients), and Scarsdale Hospital, Chesterfield, where there are 125 Beds for mental patients. Previous experience in psychiatry not essential. Ample opportunities for study. Flat available within the Group.

Apply, with names of 3 referees, to Group Secretary, The Royal Hospital, Chesterfield.

CHESTERFIELD. SCARSDALE HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER for Geriatric Unit and for duties at Penmore Hospital. Full Consultant services. Excellent scope for doctor interested in this specialty. House available on service tenancy.

Applications, giving full particulars, with names of 3 referees, to Group Secretary, Chesterfield Hospital Management Committee, at Chesterfield Royal Hospital.

CREWE AND DISTRICT MEMORIAL HOSPITAL. (108 Beds Acute and Continuation 32 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (anæsthetics), temporary or permanent. D.A. preferred. New operating suite. Duties chiefly at General Hospital and a Maternity Unit at another hospital. Hospital approved for D.A. Salary and conditions as per regulations.

Applications, giving age, details of experience, and names of 3 referees, to be sent immediately to Group Secretary, South Cheshire Hospital Management Committee, Barony Hospital, Nantwich, Cheshire.

DARLINGTON (near). AYCLIFFE HOSPITAL, Heighington, near DARLINGTON, CO. DURHAM. AYCLIFFE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital for mental defectives (664 Beds). A suitable house is available for a married man at a reasonable charge, and resident accommodation can also be provided for an unmarried medical officer. The Hospital is a modern one and approved for the D.P.M. examination of the Durham University and Conjoint Examining Board. Salary will be in accordance with the terms and conditions of hospital medical and dental staffs—i.e., £852 10s.–£55–£1182 10s. p.a.

Candidates are invited to visit the Hospital by arrangement with the Medical Superintendent to whom applications should be addressed, together with the names and addresses of 2 referees, not later than 14th October, 1957.

T. H. ALLAN, Group Secretary.

DARLINGTON (near). AYCLIFFE HOSPITAL FOR MENTAL DEFECTIVES, AYCLIFFE HOSPITAL, HEIGHINGTON, near DARLINGTON, CO. DURHAM. Locum JUNIOR HOSPITAL MEDICAL OFFICER required for an approximate period of 1 month commencing on 14th October, 1957, at the above Hospital. Salary £19 5s. per week, less an amount of £3 5s. 2d. per week in respect of residential accommodation.

Applications to the Medical Superintendent.

T. H. ALLAN, Group Secretary.

DORKING GENERAL HOSPITAL, Horsham-road, DORKING, SURREY. Locum HOUSE SURGEON required for general surgical and relief casualty duties for 1 month in first instance.

Apply to Medical Superintendent at above address (phone Dorking 3883).

DURHAM. COUNTY HOSPITAL. (116 Beds.) Resident HOUSE SURGEON required in Orthopædics and Casualty. Post recognised for pre-registration purposes. This post offers facilities for good and varied experience in a busy orthopædic and accident hospital which serves a wide mining and industrial area.

Apply, giving age, experience and names of 2 referees, to the Group Secretary, Dryburn Hospital, Durham.

DURHAM. COUNTY HOSPITAL. (116 Beds.) Senior HOUSE OFFICER in Orthopædics required immediately. Resident. The County Hospital is the main Orthopædic and Accident Hospital in a busy mining and industrial area. Experience can be obtained in all branches of orthopædics.

Applications, with particulars of previous experience and names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

DONCASTER ROYAL INFIRMARY. (330 Beds.) Applications are invited for the post of HOUSE SURGEON (Intern or Senior House Officer). Post recognised for F.R.C.S.

Applications to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) HOUSE PHYSICIAN, approved pre-registration post. Fully qualified practitioners may apply. Duties include acute and chronic medicine. Good general experience for first house appointment.

Apply Group Secretary, Westwood Hospital, Beverley, Yorkshire.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE PHYSICIAN required 1st November. Fully registered post.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR, West Norfolk and King's Lynn General Hospital (146 Beds). Recognised for F.R.C.S. Single accommodation available. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and the names of 3 referees, to Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 14th October, 1957. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary, St. James' Hospital, King's Lynn.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT HOUSE SURGEON for above Hospital. Post vacant 13th October, 1957. 6 months appointment. Recognised for F.R.C.S. and pre-registration purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 11th October, 1957.

EDGWARE GENERAL HOSPITAL. (702 Beds.) REGISTRAR (whole-time), resident, required in Department of Anæsthesia at above Hospital, which may be visited by direct appointment with Medical Director.

Application forms obtainable from, and returnable to, Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, Edgware, Middlesex, by 15th October, 1957.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (pre-registration post), vacant now. Duties with General Surgical Unit, doing some genito-urinary work. Post recognised by the Royal College of Surgeons. 6 months appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary at Chase Farm Hospital.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. Applications are invited for the post of RESIDENT PATHOLOGIST (Senior House Officer grade) for duties in the Area Laboratory and at other hospitals in the Group. The Area Laboratory is recognised for the Diploma of Pathology of the Royal Colleges of Physicians and Surgeons. Further information can be obtained from the Senior Pathologist. Appointment tenable for 1 year.

Applications, with the names of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital, by 12th October, 1957.

EPPING. ST. MARGARET'S HOSPITAL. Applications are invited from fully registered medical practitioners for the post of HOUSE PHYSICIAN at the above Hospital. The appointment which is in general medicine is for 6 months, including duties at Honey Lane Hospital for part of this time.

Applications, with copies of 2 recent testimonials, immediately to the Secretary, Epping Group Hospital Management Committee, Oak Cottage, The Plain, Epping, Essex.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. Applications are invited from pre-registration and registered medical practitioners for the appointment of HOUSE SURGEON (obstetrics and gynæcology), vacant 17th November, 1957.

Applications to the Hospital Secretary, with copies of 2 recent testimonials, by 12th October, 1957.

GLASGOW NORTHERN HOSPITALS BOARD OF MANAGEMENT. Applications are invited for 2 immediate vacancies for JUNIOR HOSPITAL MEDICAL OFFICERS in the Infectious Diseases Department (450 Beds). Excellent experience in infectious diseases and general medicine. Undergraduate and postgraduate teaching unit and Regional centre for treatment of poliomyelitis.

Applications, stating age, nationality, qualifications, and experience with names of 2 referees, to Physician-Superintendent, Ruchill Hospital, Glasgow, N.W.

GLASGOW NORTHERN HOSPITALS BOARD OF MANAGEMENT. Applications are invited for 2 immediate vacancies for JUNIOR HOSPITAL MEDICAL OFFICERS, Ruchill Hospital, Glasgow, N.W., in the Chest Department (Medical Unit). The department consists of 200 Beds for the treatment of pulmonary tuberculosis and other diseases of the chest. There is attached to the department a Thoracic Surgical Unit of 60 Beds. Facilities are available for postgraduate study and research.

Applications, stating age, nationality, qualifications, and experience, with names of 2 referees, to Physician-Superintendent immediately.

GLASGOW. ROYAL HOSPITAL FOR SICK CHILDREN, YORKHILL, GLASGOW. JUNIOR HOSPITAL MEDICAL OFFICER (resident) required for Medical Paediatric Unit. National Health Service salary and conditions of service.

Applications, stating age and giving full details of qualifications and experience, with the names of 3 referees, to be lodged with the Secretary of the Board of Management for Glasgow and District Children's Hospitals, 86, St. Vincent-street, Glasgow, C.2.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. (118 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. SECOND RESIDENT SURGICAL OFFICER with duties in orthopædics, gynæcology, E.N.T. and relief duties for Resident Surgical Officer required immediately. Registrar rate of pay. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th October, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GRIMSBY GENERAL HOSPITAL. Applications are invited for CASUALTY OFFICER (Senior House Officer grade) with some E.N.T. duties. Post vacant in November. Up-to-date Medical Library and reading facilities available.

Applications, with names and addresses of 2 referees, to Hospital Secretary.

HEREFORD. GENERAL HOSPITAL. (154 Beds.) HOUSE OFFICER (general surgery) required, pre-registration post. Hospital recognised by R.C.S. Duties include care of general surgical beds and in addition for 3 months of orthopædic beds and for 3 months of E.N.T. beds.

Applications, with copies of 2 testimonials, to be sent to the Group Secretary, Victoria House, Eign-street, Hereford.

HARROGATE AND DISTRICT GENERAL HOSPITAL, HARROGATE, YORKSHIRE. (253 Beds.) Applications are invited for the post of HOUSE SURGEON (recognised pre-registration appointment).

Apply to Hospital Secretary with names of 2 referees.

GREENOCK. GATESIDE I.D. HOSPITAL. Board of MANAGEMENT FOR GREENOCK AND DISTRICT HOSPITALS. Applications are invited from suitably qualified medical practitioners for the appointments of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICERS. Good experience offered in the diagnosis and treatment of infectious diseases including venereal diseases. Well equipped Clinical Laboratory. The appointments will be subject to the National Health Service (Scotland) superannuation regulations.

Applications, giving details of age, experience, and qualifications, together with copies of 3 recent testimonials or names of referees, should be forwarded to the Group Secretary and Treasurer, 47, Eldon-street, Greenock, within 14 days from date of insertion.

HALIFAX. NORTHOWRAM HALL HOSPITAL. (106 Beds.) SENIOR HOUSE OFFICER in Chest Diseases required. Post vacant 1st October, 1957. Duties include attendance at busy Chest Clinic, at the Royal Halifax Infirmary, and non-tuberculosis chest ward work. This post offers excellent facilities for a study of chest diseases and experience is available with bronchoscopies and bronchograms. Salary £819 10s. p.a., with a deduction of £150 p.a. for board, residence, &c.

Applications to be forwarded to the Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. House PHYSICIAN in General Medicine required. Post vacant 1st November, 1957.

Apply to Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ST. JOHN'S HOSPITAL. (382 Beds.) Senior HOUSE OFFICER in Geriatrics and General Medicine required. Post vacant 16th October, 1957. Salary £819 10s. p.a., with deduction of £150 p.a. for board-residence, &c.

Applications to the Group Secretary, Royal Halifax Infirmary, Halifax.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) Locum SENIOR HOUSE OFFICER (casualty) required any 2 weeks in October. Rate of pay £15 19s. per week.

Apply immediately to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (493 Beds.) HOUSE PHYSICIAN required. Pre-registration post vacant 2nd November.

Applications, to be received by 16th October, to the Hospital Administrator.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. Locum Tenens HOUSE SURGEON required for the period 28th October–16th November, inclusive.

Applications, together with copies of 2 recent testimonials, should be sent to the Hospital Secretary as soon as possible.

HEMEL HEMPSTEAD, HERTFORDSHIRE. ST. PAUL'S HOSPITAL. HOUSE PHYSICIAN (pre-registration) required as from 17th October.

Applications to the Hospital Secretary, together with 2 copies of testimonials, or names of 2 referees.

HERTFORD COUNTY HOSPITAL. (173 Beds. Hospital situated 21 miles from London.) RESIDENT CASUALTY OFFICER (Senior House Officer grade) with attachment to Paediatrician and Ophthalmic Consultant. Salary £819 10s. p.a., less £150 p.a. residential emoluments. Recognised under F.R.C.S. regulations. Appointment to commence as soon as possible.

Apply, with full details and references, to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HUDDERSFIELD (near). STORTHES HALL HOSPITAL, KIRKBURTON, near HUDDERSFIELD. Applications are invited for the post of Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER (long or short period). Residential accommodation for single persons available.

Applications, giving age, experience, &c., to be sent to the Medical Superintendent immediately.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty immediately. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (419 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (pre-registration post), resident, and tenable for 6 months. This post includes gynæcology and general surgery.

Applications, with 2 recent testimonials, to the Hospital Secretary.

ILKLEY, YORKSHIRE. MENSTON (MENTAL) HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER required. The Hospital is recognised for the D.P.M. and facilities granted to attend courses at the Department of Psychiatry, Leeds University. Residential accommodation for single persons. No house or flat available.

Applications, stating age, qualifications and experience, and names of 2 referees, to Physician-Superintendent.

ILKLEY, YORKSHIRE. MENSTON (MENTAL) HOSPITAL. Locum Tenens RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER required immediately.

Apply Physician-Superintendent.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of SENIOR HOUSE SURGEON to the Fracture and Orthopædic Department. The post is graded Senior House Officer and is recognised for the F.R.C.S. examinations. The Department has 2 Consultants, about 60 Beds and a large outpatient attendance; it offers wide experience.

Applications, stating age, nationality and experience, together with copies of recent testimonials, to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL, Heath ROAD WING, IPSWICH. (280 Beds.) Post of HOUSE PHYSICIAN (pre-registration) vacant 17th October, 1957.

Applications, stating qualifications, age, nationality, &c., with copies of 3 recent testimonials, to Hospital Secretary.

KETTERING GENERAL HOSPITAL, Kettering. (130 Beds.) KETTERING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Anæsthetics. Post vacant now. Post recognised for D.A.

Applications, giving details of qualifications and experience, and enclosing copies of 3 recent testimonials, to be sent to the Group Secretary at the above address.

KIDDERMINSTER AND DISTRICT GENERAL HOS-PITAL. ANÆSTHETIST required temporarily for 2 notional half-days a week, payment being at the rate of £367 10s. p.a.

Full details of the duties can be obtained from the Group Secretary, Mid-Worcestershire Hospital Management Committee, Birmingham-road, Bromsgrove, to whom applications should be sent immediately.

LANCASTER MOOR HOSPITAL, Lancaster. Regional Mental Hospital. Applications are invited for the post of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female). Unfurnished house available; furnished quarters for married couple (without children) or single person. Hospital recognised for D.P.M. and facilities granted for attending neighbouring universities. All modern methods of investigation and treatment carried out. Hospital serving N. Lancashire and Lake District. Post for initial period of 4 years, but renewable if services satisfactory.

Apply Medical Superintendent.

LEAMINGTON SPA. WARNEFORD GENERAL HOS-PITAL. (197 Beds.) SENIOR HOUSE OFFICER (anæsthetics) for duties at the above Hospital. Post vacant and recognised for D.A.

Applications to Hospital Secretary.

LEAMINGTON SPA. WARNEFORD GENERAL HOS-PITAL. (197 Beds.) CASUALTY OFFICER (Senior House Officer), Male or Female, resident or non-resident. Post vacant 12th November, 1957, and suitable for one reading for higher qualifications being recognised for F.R.C.S., affording contact with all Specialist Units in the Hospital.

Applications, with names and addresses of 3 referees, to Hospital Secretary.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Chest Diseases

Scotton Banks Sanatorium, Knaresborough (200 staffed beds). Visiting staff includes Teaching Hospital Consultants. Resident.

General Medicine

Applications are invited for the post of Research Registrar in Rheumatism to assist the Professor of Clinical Medicine with research projects at the Royal Bath Hospital, Harrogate, which is the centre for the Regional Rheumatism Scheme, or elsewhere in the Region. This appointment is associated with the University of Leeds.

Infectious Diseases

Leeds Road Hospital, Bradford (120 I.D. beds). Resident.

Applications, stating age, sex, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary to the Joint Registrars Committee, Park-parade, Harrogate, not later than 9th October, 1957.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. SENIOR REGISTRAR in Diagnostic Radiology required for 1 year in the first instance; appointment renewable thereafter. Diploma in Radiology essential and other higher qualification desirable. Terms and conditions of service for hospital medical staff apply.

Applications, giving details of age, education, qualifications, and previous posts with dates, and 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 2, before 23rd October, 1957.

LINCOLN. ST. GEORGE'S HOSPITAL. (242 Beds.) Applications are invited for the post of pre-registration HOUSE PHYSICIAN or SENIOR HOUSE OFFICER in General Medicine at the above Hospital which has been recently recommissioned.

Applications, giving full particulars, together with not less than 2 names for reference, should be forwarded to the Secretary as soon as possible.

LINCOLN. ST. GEORGE'S HOSPITAL, Long Leys-road. (242 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in Gynæcology.

Applications, giving full particulars, together with not less than 2 names for reference, should be forwarded to the Secretary as soon as possible.

LUTON AND DUNSTABLE HOSPITAL. North West METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (resident or non-resident) required at the above Hospital (250 Beds) and associated units (134 Beds), for a 1-year or 2-year appointment. Post recognised for D.A. and F.F.A.R.C.S., and now vacant. The Hospital may be visited by direct appointment.

Application forms obtainable from the Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, and returnable as soon as possible.

LEICESTER. TOWERS MENTAL HOSPITAL. (1168 Beds.) Applications are invited for the whole-time post of JUNIOR HOSPITAL MEDICAL OFFICER. Salary £852 10s.–£55–£1182 10s. There is ample opportunity for experience in all branches of psychiatry including outpatient work and, the Hospital is recognised for D.P.M. experience. Facilities for post-graduate training exist at Sheffield University. Resident accommodation is available for a single man, for which the appropriate charge will be made. Candidates must have completed their service with H.M. Forces.

Applications, giving age, nationality, and full details with the names of 2 referees, to be sent to the Medical Superintendent as soon as possible.

MAIDENHEAD HOSPITAL, Berkshire. Applications invited for post of HOUSE PHYSICIAN vacant 4th November. Pre-registration post.

Applications, stating age, nationality and qualifications, with names of 3 referees, to Secretary.

MANCHESTER. MONSALL HOSPITAL, Newton Heath MANCHESTER, 10. SENIOR HOUSE OFFICER required (resident) for infectious diseases wards.

Applications, with names of 2 referees, to Group Secretary, Booth Hall Hospital, Manchester, 9, from whom further particulars may be obtained.

MANCHESTER REGIONAL HOSPITAL BOARD. Senior REGISTRAR in Psychiatry in the Oldham and District Group of hospitals. Duties include attendance at Consultant Psychiatric Clinics and participation in treatment of inpatients and outpatients at hospitals in the Group. The person appointed may be required to undertake duties in other hospital centres during the course of his training.

Application forms from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, to be returned by 21st October, 1957.

MANCHESTER REGIONAL HOSPITAL BOARD. Appli-cations are invited for the full-time post of ORTHOPÆDIC REGISTRAR in the Ashton, Hyde and Glossop Group of hospitals, with duties mainly at Ashton-under-Lyne General Hospital. There are approximately 40 orthopædic beds and busy Orthopædic and Casualty Outpatients Department. The post is recognised for additional training under F.R.C.S. regulations and is vacant on 1st November.

Applications, stating age, nationality, qualifications and experience, with copies of 2 references, should be forwarded to the Group Secretary, Ashton, Hyde and Glossop Hospital Management Committee, General Hospital, Ashton-under-Lyne, Lancashire, as soon as possible.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. BAGULEY HOSPITAL. (402 Beds.) The Board invite applications for the post of REGISTRAR in Thoracic Surgery. This Hospital is a large Thoracic Unit fully equipped for the medical and surgical treatment of tuberculosis and other chest diseases. Attached to the Hospital is a chest clinic. The post offers opportunities for wide experience in medical and surgical treatment of patients suffering from tuberculosis and other diseases of the chest, together with chest clinic work. Ample scope for clinical research.

Applications, stating age, qualifications, nationality, experience, and the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, within 7 days of appearance of this advertisement.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications from registered medical practitioners for the post of REGISTRAR in Plastic Surgery. The duties are largely at the main Plastic Unit at Wythenshawe Hospital, which is a general hospital with 71 plastic surgery beds. In addition the holder of this post attends other hospitals where plastic surgery is carried out under the direction of the Consultants.

Applications, stating age, qualifications, present post, and experience, together with the names of 2 referees, to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANCHESTER REGIONAL HOSPITAL BOARD. Sal-FORD HOSPITAL MANAGEMENT COMMITTEE. HOPE HOSPITAL. Applications are invited for the post of REGISTRAR in Pathology or RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade). The Hospital is recognised for the Diploma in Pathology and there are opportunities for study in all branches of clinical pathology.

Applications, together with names and addresses of 2 referees, to be sent to Group Secretary, Salford Royal Hospital, Salford, 3, before 12th October, 1957.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) HOUSE OFFICER (general surgery) required. Pre-registration. Post recognised for F.R.C.S. examination. Post now vacant.

Application form from Secretary.

MANCHESTER, 23. WYTHENSHAWE HOSPITAL. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of Locum SENIOR HOUSE OFFICER in Plastic Surgery at the above Hospital, for 10 weeks commencing 14th October, 1957. This Officer is the only House Officer for a Plastic Surgery Unit of 71 Beds which takes most of his time, but in addition there are some general surgical duties.

Applications, with the names of 2 referees, to the Group Secretary, Withington Hospital, Manchester, 20.

MARKET DRAYTON, SHROPSHIRE. CHESHIRE JOINT SANATORIUM. SENIOR HOUSE OFFICER required for inpatient and outpatient duties with Thoracic Surgical Unit dealing with tuberculous and non-tuberculous cases for a population of approximately 500,000.

Applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

NEWCASTLE GENERAL HOSPITAL. (838 Beds.) SENIOR HOUSE OFFICER required for Department of Neurological Surgery, Regional Unit. Further particulars on request.

Applications, with names and addresses of 2 referees, to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4.

NEWCASTLE GENERAL HOSPITAL. (838 Beds.) SENIOR HOUSE OFFICER PHYSICIAN required for period of 6 months for Clinic No. 1 at the above Hospital. Further particulars on request.

Applications, with names and addresses of 2 referees, to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, as soon as possible.

NEWCASTLE REGIONAL HOSPITAL BOARD. Locum Tenens REGISTRAR PSYCHIATRIST (whole-time) for the Department of Psychological Medicine, Newcastle General Hospital, for a period of approximately 6 months from 1st October, 1957. Single accommodation available, married person may live out by arrangement.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, immediately.

NEWCASTLE REGIONAL HOSPITAL BOARD. Special AREA OF CUMBERLAND AND NORTH WESTMORLAND. E.N.T. REGISTRAR. Post recognised for F.R.C.S. and D.L.O. Single quarters available at Cumberland Infirmary, Carlisle. Registrar will work under direction of Senior E.N.T. Surgeon at hospitals in Carlisle, West Cumberland and Dumfries.

Applications, stating age, qualifications and experience, together with names of 3 referees, should be sent to the Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Special AREA COMMITTEE FOR CUMBERLAND AND NORTH WESTMORLAND. ORTHOPÆDIC REGISTRAR required for Cumberland Infirmary, Carlisle (332 Beds). Appointment for 1 year, with likelihood of extension for second year. Residence provided for single doctor, if required.

Applications, with names of up to 3 referees, to Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Special AREA FOR CUMBERLAND AND NORTH WESTMORLAND. EAST CUMBERLAND GROUP OF HOSPITALS. SURGICAL REGISTRAR (resident), whole-time, required for 1 year in the first instance, with the likelihood of extension. Main duties at the Cumberland Infirmary, Carlisle (332 Beds), where the Registrar will have duties in the Casualty Department and in the wards. The post is recognised under the F.R.C.S. regulations.

Applications, together with names and addresses of 1–3 referees, and/or 1–3 testimonials, to the Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 14 days.

NORTHAMPTON (near). CREATON HOSPITAL. (138 Beds.) Applications are invited from suitably qualified medical practitioners for the post of SENIOR HOUSE OFFICER. The Hospital is for the treatment of both pulmonary and non-pulmonary tuberculosis. There is a modern major Thoracic Surgical Unit for tuberculous and non-tuberculous diseases of the chest.

Applications, stating age, experience, and qualifications, together with the names and addresses of 2 referees, should be sent to the Secretary, Northampton and District Hospital Management Committee, General Hospital, Northampton.

NORWICH. ST. ANDREW'S HOSPITAL, Thorpe, NORWICH. Applications are invited from registered medical practitioners (Male or Female) for the appointment of SENIOR HOUSE OFFICER (psychiatric). The Hospital has 1250 Beds, an admission-rate of over 750 annually and affords comprehensive experience in psychiatry. The salary and conditions of service will be as laid down by the Ministry for Senior House Officers. Residential accommodation with board available.

Applications, stating age, qualifications, and full particulars of experience, together with the names and addresses of 2 referees, to be sent as soon as possible to the Medical Superintendent.

NOTTINGHAM GENERAL HOSPITAL. A Senior HOUSE OFFICER (orthopædic and fracture) required as soon as possible. Post offers exceptional experience in traumatic surgery. LOCUM required in the meantime for any period.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. E.N.T. Department. A SENIOR HOUSE OFFICER (E.N.T.) required at above Hospital. This post is recognised for the D.L.O. and F.R.C.S. examinations. Salary and conditions of service in accordance with Ministry regulations. Duties to commence about end September.

Applications, stating age, qualifications, experience and nationality, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. (452 Beds. Recognised for D.Path.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (pathology) required 1st December. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th October, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

PETERBOROUGH. THE MEMORIAL HOSPITAL. PETERBOROUGH AND STAMFORD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEONS (2), General Surgery, vacant 1st November, 1957.

Applications, with testimonials, should be addressed to the Secretary, Memorial Hospital, Peterborough.

PETERBOROUGH. THE MEMORIAL HOSPITAL. PETERBOROUGH AND STAMFORD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (orthopædic). Applications are invited for this position, vacant now. Exceptional experience offered in busy department.

Apply to the Secretary, Memorial Hospital, Peterborough.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER, vacant 1st December, 1957. Devonport Hospital. Recognised for the F.R.C.S.

Applications to the Group Secretary, 7, Nelson-gardens, Devonport.

HOUSE SURGEON (pre-registration post), vacant 2nd November, 1957. Devonport Hospital. Recognised for the F.R.C.S.

Applications to the Group Secretary, 7, Nelson-gardens, Devonport.

HOUSE PHYSICIAN (pre-registration post), vacant 1st January, 1958.

Applications to the Group Secretary, Greenbank Road Hospital, Plymouth.

HOUSE SURGEONS (pre-registration posts), vacancies 9th December, 1957, 1st and 4th January, 1958. Recognised for the F.R.C.S.

Applications to the Group Secretary, Greenbank Road Hospital, Plymouth.

PÆDIATRIC HOUSE PHYSICIAN (pre-registration post), vacant 1st January, 1958. Recognised for the D.C.H.

Applications to the Group Secretary, Freedom Fields Hospital, Plymouth.

In all cases send names of 3 referees.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. INFECTIOUS DISEASES HOSPITAL. SENIOR HOUSE OFFICER required with duties also on the Tuberculosis Wards and the Poliomyelitis Diagnostic and Respiratory Centre. Vacant now.

Applications, stating age, experience and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. HURST.

St. Mary's Hospital, Milton-road, Portsmouth.

OXFORD REGIONAL HOSPITAL BOARD. Registrar in General Medicine to the Northampton General and Associated hospitals. The post will be for 1 year and be eligible for extension to a second year.

Applications, on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 14th October.

OXFORD. THE UNITED OXFORD HOSPITALS. Applications are invited for the post of RESIDENT JUNIOR PATHOLOGIST for 6 months at the Radcliffe Infirmary, Oxford. The post is graded at Senior House Officer rate, £819 10s. p.a., and will be vacant with effect from 11th November, 1957.

Applications, stating age, qualifications and experience, together with the names of 2 referees, to the Administrator, Radcliffe Infirmary, Oxford, should be received not later than 11th October, 1957.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for 2 posts of SENIOR HOUSE OFFICER in the Anæsthetic Department at the Radcliffe Infirmary, with effect from 1st November and 1st December, 1957, for a period of 6 months.

Applications, stating age, qualifications and experience, together with names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford, by 10th October, 1957.

READING. BATTLE HOSPITAL. (391 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT JUNIOR HOUSE SURGEON in the Accident and Orthopædic Department. Post vacant 1st November, 1957. F.R.C.S. recognised. Also casualty duties.

Apply, stating age, qualifications with dates, nationality, present post, with 1 copy of recent testimonial, to Hospital Secretary.

READING COMBINED HOSPITALS. Area Department OF OBSTETRICS AND GYNÆCOLOGY. (100 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the resident appointment of GYNÆCOLOGICAL HOUSE SURGEON at the Royal Berkshire Hospital, Reading. Vacant 8th October, 1957, and tenable for 6 months. Post recognised for M.R.C.O.G.

Write, stating age and qualifications with dates, nationality and present post, with copy of 1 recent testimonial, to Secretary.

ROCHDALE INFIRMARY. Rochdale and District Hospital MANAGEMENT COMMITTEE. HOUSE SURGEON (resident) required. Pre- or post-registration Doctors eligible for this post, which is recognised for 6 months F.R.C.S. experience.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEONS (2) required from 1st December, 1957, in the General Surgical Unit. Recognised for F.R.C.S. Open to either pre-registration applicants or to fully qualified practitioners. This very active unit of a total of approximately 180 Beds affords ample opportunities for candidates to obtain first-class tuition and experience. The candidates appointed will be attached to a unit of approximately 60 Beds.

Applications should be forwarded to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE PHYSICIAN (Male) required from 1st October, 1957. Not pre-registration appointment.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SHEFFIELD. CITY GENERAL HOSPITAL. (658 Beds. Recognised for F.R.C.S. examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT CASUALTY REGISTRAR required 23rd November. The successful candidate to reside at the Hospital when on duty (including "on call" duty). Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th October, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. CITY GENERAL HOSPITAL. (652 Beds. Recognised for Final Fellowship examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SURGICAL REGISTRAR required immediately. The successful candidate to reside at the Hospital when "on call." This is a large general hospital with teaching affiliations. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th October, 1957, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for M.R.C.O.G.) Applications are invited for the resident post of SENIOR HOUSE OFFICER (gynæcology). Duties divided between units in charge of Professor of Obstetrics and Gynæcology, University of Sheffield, and full-time Consultant respectively.

Apply, giving full details of age, nationality, qualifications, present and previous appointments with dates, and the names of 2 persons for reference, to the Group Secretary, Nether Edge Hospital, Sheffield, 11.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (dermatology) required with duties at the Leicester Royal Infirmary and Leicester General Hospital. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th October, 1957, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR REGISTRAR (psychiatry) required for duties at the Towers Hospital, Leicester, and at the Children's Psychiatric Clinics in Leicester and Leicestershire. Possession of D.P.M. essential. Appointment for 1 year in first instance reviewable annually.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 14th October, 1957.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the post of SURGICAL REGISTRAR. Post vacant 1st January, 1958. The successful candidate will work on a rotation basis between the Royal Infirmary and the Children's Hospital. It is intended, if possible, that the holder of the post will spend equal periods in the Orthopædic Department and on each of the 2 surgical firms at the Royal Infirmary; and for a period at the Children's Hospital.

Applications, stating age, qualifications and experience, with the names of 3 referees, should be sent not later than 19th October, 1957, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY/ROYAL HOSPITAL UNITS. Applications invited for the non-resident post of REGISTRAR to the Department of Radiology at the above hospitals. Post vacant 1st December.

Applications, stating age, qualifications, and experience, with the names of 3 referees, should be sent not later than 12th October, 1957, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SENIOR HOUSE OFFICER (E.N.T.). Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O.R.C.S. Vacant 1st November, 1957.

Applications, with copy testimonials, to the Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) HOUSE SURGEON, vacant 1st November, 1957. Pre-registration candidates eligible. Recognised for the F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SENIOR HOUSE OFFICER (gynæcological). 50 gynæcological beds and 2 House Surgeons. Posts recognised for M.R.C.O.G. Vacant 4th November, 1957.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) HOUSE PHYSICIAN, pre-registration candidates eligible. Vacant 24th October, 1957.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SOUTHEND GENERAL HOSPITAL. (262 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (pre-registration). Post vacant 18th November, 1957.

Applications, stating age, qualifications, experience, &c., together with copies of recent testimonials, should reach the undersigned at the Hospital by 17th October, 1957.

J. C. FIELD, Secretary.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recognised by Conjoint Board for D.C.H.) HOUSE OFFICER required 4th November, 1957. Total establishment of 3 residents. Salary, &c., as nationally advocated.

Applications, with copies of testimonials, to be submitted by 12th October, 1957, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GROUP OF HOSPITALS. South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of Whole-time ANÆSTHETIC REGISTRAR to the above Group for work in the General and Special Units. Facilities for working for Primary or Final F.F.A.R.C.S.

Forms of application may be obtained from the undersigned and should be returned by Wednesday, 16th October, 1957.

FRANK JENNINGS, Group Secretary,
Southampton Group Hospital Management Committee.
Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (274 Beds.) RESIDENT HOUSE PHYSICIAN required. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton, as soon as possible.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (274 Beds.) RESIDENT HOUSE SURGEON required. Pre-registration candidates eligible.

Applications, with copies of recent testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (274 Beds. Recognised for F.R.C.S.) ORTHOPÆDIC HOUSE SURGEON (post recognised for Pre-registration Service and tenable for 6 months) and SENIOR HOUSE OFFICER (orthopædic). The Hospital is the centre to which all trauma from a large industrial town and port is directed thus providing excellent experience in the treatment of traumatic conditions; patients with orthopædic conditions are also drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment at the Hastings Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 19th October, 1957.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. General Medicine. STRACATHRO HOSPITAL, BRECHIN. Applications are invited for the post of REGISTRAR in Medicine at Stracathro Hospital, Brechin (a general hospital of 676 Beds—150 medical). Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, "Braeknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 19th October, 1957.

ST. ASAPH GENERAL HOSPITAL, Flintshire. (54 obstetric beds.) Applications are invited from pre-registration or registered medical practitioners for the appointment of JUNIOR HOUSE OFFICER. Recognised for the D.Obst. R.C.O.G. Post vacant 1st November, 1957. Tenable for 6 months. Married quarters available.

Applications, together with 2 copies of testimonials, to be sent immediately to the Group Secretary, Clwyd and Deeside Hospital Management Committee, "Rhianfa," Russell-road, Rhyl.

ST. ALBANS, HERTFORDSHIRE. HILL END HOSPITAL. (709 Beds. For Mental and Nervous Disorders.) Locum Tenens REGISTRAR in Psychiatry required from 11th October, 1957, for an indefinite period.

Applications to Secretary, Mid-Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, Herts.

ST. ALBANS CITY HOSPITAL. (384 Beds.) North West METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time SURGICAL REGISTRAR required for general surgical team. Post vacant 20th October, 1957. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, Herts, by 14th October, 1957.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) Locum Tenens SURGICAL REGISTRAR (resident) required for 1 of the 2 surgical teams from 20th October, 1957, for an indefinite period.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, Herts.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) HOUSE PHYSICIAN (House Officer grade) required for 1 of the 2 medical firms for duties mainly on the acute wards. Post vacant approximately 21st October, 1957, and tenable for 6 months. Preference given to candidates seeking post under the Medical Act, 1950.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) HOUSE PHYSICIAN (House Officer grade) required for duties mainly in the Paediatric Department. Post vacant approximately 21st October, 1957, and tenable for 6 months. Preference given to candidates seeking pre-registration post under the Medical Act, 1950.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) HOUSE SURGEON (House Officer grade) required for 1 of the 2 surgical teams. Post recognised for F.R.C.S. Post vacant 26th October, 1957, and tenable for 6 months. Preference given to candidates seeking post under the Medical Act, 1950.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following post, which is approved for pre-registration purposes.

Stockport Infirmary (163 Beds)

HOUSE OFFICER (general surgery and gynæcology). Recognised for the F.R.C.S. Vacant now.

Applications, with copies of 2 testimonials, to the Group Secretary, 59B, Shaw-heath, Stockport.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (pædiatrics) required, vacant now. Pre-registration post. Recognised for D.C.H.

Detailed applications, with copy testimonials, to Group Secretary, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Applications invited for HOUSE OFFICER (medical)—2 posts—both vacant mid-October. Recognised pre-registration.

Detailed applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. SENIOR HOUSE OFFICER (anæsthetics) required. Post vacant shortly. Recognised for F.F.A.R.C.S. and D.L.O.

Applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

SUTTON AND CHEAM HOSPITAL, Cotswold-road, SUTTON, SURREY. RESIDENT SENIOR HOUSE OFFICER (Casualty Officer). Post recognised for F.R.C.S. Vacant 1st November.

Applications, stating age, qualifications and experience, with copies of recent testimonials and the names of 2 referees, to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. SENIOR HOUSE OFFICER (anæsthetics) required. Post, which is tenable for 1 year, will be resident.

Applications, with names of 2 referees, to Secretary.

TORQUAY. TORBAY HOSPITAL. Resident Senior HOUSE OFFICER (surgery) required immediately. Post recognised for F.R.C.S. There is a complement of 6 Resident House Officers.

Applications, stating qualifications, age, nationality, with copy testimonials (quoting Ref. F.955/83), to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

TREDEGAR GENERAL HOSPITAL, Monmouthshire. RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SURGICAL OFFICER (Junior Hospital Medical Officer grade) required for Surgical Unit at above Hospital. Duties are those of Assistant to General Surgeon; staff includes also House Surgeon. Commodious family flat.

Apply, with full particulars and stating names of 2 referees, to Secretary.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Applications invited from registered medical practitioners for post of JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics (recognised for D.A. and F.F.A.R.C.S.). The post offers wide experience, as large Orthopædic and Thoracic Units are located in the Hospital in addition to the general surgical and gynæcological wards. Appointment may be either resident or non-resident. If resident, a charge at the rate of £170 p.a. will be made.

Address written applications, stating age, nationality, qualifications with dates, experience, details of previous appointments, and 2 names and addresses for reference, to—

W. BOWRING, Group Secretary.

Pinderfields General Hospital, Wakefield.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics (resident or non-resident) required. Salary £19 5s. per week. Charge for accommodation £3 5s. 6d. per week.

Full particulars and 2 names for reference to—

W. BOWRING, Group Secretary.

Pinderfields General Hospital, Wakefield.

WAKEFIELD. STANLEY ROYD HOSPITAL. Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER in Psychiatry required. Salary £19 5s. per week. Accommodation for single person at charge of £3 5s. 6d. per week.

Address written applications to W. BOWRING, Group Secretary. Pinderfields General Hospital, Wakefield.

WAKEFIELD. STANLEY ROYD HOSPITAL. Applications invited for post of JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER in Psychiatry. Accommodation available for single person and may be available for a married person.

Address applications, giving full personal particulars, details of training, experience, &c., to W. BOWRING, Group Secretary. Pinderfields General Hospital, Wakefield.

WELSH REGIONAL HOSPITAL BOARD/UNITED CARDIFF HOSPITALS. SENIOR REGISTRAR in Anæsthetics. Successful candidate will work as member of the Department of Anæsthetics, Cardiff, partly in the Teaching Hospital and partly in other hospitals in Cardiff. Duties will include undergraduate teaching and assistance with research. Subject to review annually.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WARWICK (near). CENTRAL MENTAL HOSPITAL. (1400 Beds.) SENIOR HOUSE OFFICER. Neurosis Unit, adult and child psychiatry clinics, departments of electroencephalography, occupational therapy, psychology and social work. Recognised for D.P.M. Flat available.

Applications, with names and addresses of 3 referees, to Medical Superintendent within 14 days.

WINCHESTER AND LORD MAYOR TRELOAR GROUPS, SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Locum REGISTRAR in Anæsthetics (Registrar grade) required 14th–28th October at Alton General Hospital with duties at Lord Mayor Treloar and Henry Gauvain Hospitals, Alton. Resident.

Please apply to Group Secretary, Royal Hampshire County Hospital, Winchester.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (315 Beds.) HOUSE PHYSICIAN (pre-registration) vacant immediately.

Applications, with copy of 2 testimonials, to the Group Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Obstetric AND GYNÆCOLOGICAL HOUSE SURGEON required, Male or Female, for post vacant 6th November. Post recognised for both M.R.C.O.G. and D.Obst.R.C.O.G. Not a pre-registration post. Successful candidate will be resident at Old Windsor Unit of the Hospital.

Applications, stating age, nationality, qualifications with dates, and copies of recent testimonials or names of 3 referees, to Secretary by 16th October.

WOKING AND CHERTSEY GROUP LABORATORY. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer). The post is 1 of 2, and involves a half-share in the emergency service. Training will be available in all branches of clinical pathology. Post tenable for 1 year. Salary £819 10s. p.a. (deduction for board and lodging £150 p.a.).

Applications, stating age, qualifications, &c., together with the names of 2 referees, should be sent as soon as possible to the Director, Group Laboratory, St. Peter's Hospital, Chertsey, Surrey.

WOLVERHAMPTON. NEW CROSS HOSPITAL. (634 Beds.). Pre-registration HOUSE OFFICER in Medicine. Vacant now.

Applications to the Hospital Secretary.

WORKSOP. VICTORIA HOSPITAL. (122 Beds. Recognised for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics and casualty) required immediately. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th October, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

U.S.A. MUHLENBERG HOSPITAL, Plainfield, N.J. INTERNSHIP, 400-Bed hospital 25 miles from New York City. Teaching programme directed by Johns Hopkins faculty member. $140 monthly stipend plus full maintenance. Transportation advanced.

Inquiries to Director.

Public Appointments

MUNICIPAL BOARD OF MOMBASA. Applications are invited for the appointment of DEPUTY MEDICAL OFFICER OF HEALTH. Salary £1828–£64–£2148. Mileage allowance, house allowance or unfurnished housing at 10% of salary. Applicants must be registered medical practitioners, holding the Diploma of Public Health or equivalent qualification. Experience in tuberculosis control an advantage. Medical certificate of fitness required before appointment. Passages and home leave in accordance with the Board's terms of service. Full particulars on request. Personal canvassing disqualifies.

Apply before 6th November, 1957, to Town Clerk, P.O. Box 440, Mombasa, Kenya, enclosing a recent photograph. Successful applicant required to pass Ki-Swahili Examination within 2 years of appointment. A. V. RATCLIFF, Town Clerk

Town Hall, Mombasa, 7th September, 1957.

NEW SOUTH WALES, AUSTRALIA. PATHOLOGICAL LABORATORIES, DEPARTMENT OF PUBLIC HEALTH. Applications are invited for the position of PATHOLOGIST. Salary £A2740 p.a. Diploma in Clinical Pathology or higher degree in pathology essential. Additional experience in histopathology desirable. Successful applicant will be eligible, subject to medical fitness, to contribute to the State Superannuation Fund. First-class ship fares to Sydney of appointee and family will be paid.

Applications (4 copies) should be lodged at the Office of the Agent General for New South Wales, 56, Strand, London, W.C.2, by 18th October, 1957.

NOTTINGHAMSHIRE COUNTY COUNCIL. Public HEALTH DEPARTMENT. Applications are invited for the appointment of MEDICAL OFFICER for Mental Health from registered medical practitioners with special experience in mental health. The possession of a Diploma in Psychological Medicine will be an advantage. Salary £1520–£50–£1570–£55–£1955 p.a.

Application forms and conditions of appointment from the County Medical Officer, County Hall, Trent Bridge, Nottingham. Applications by 21st October, 1957.

A. R. DAVIS, Clerk of the County Council.

SOUTH CORK BOARD OF PUBLIC ASSISTANCE. Temporary vacancy for registered JUNIOR RESIDENT MEDICAL OFFICER (St. Finbarr's Hospitals). Remuneration: £502 p.a.

Application forms and particulars may be obtained from the County Manager, Courthouse, Cork, with whom completed applications should be lodged not later than 5 P.M. on Wednesday, 16th October, 1957.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointments as Appointed Factory Doctor are vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	County	Latest date for receipt of applications
TRURO ..	..CORNWALL ..	19TH OCTOBER, 1957
TUNSTALL ..	..STAFFORD ..	26TH OCTOBER, 1957
LIVERPOOL NO. (2) DISTRICT	..LANCASTER ..	26TH OCTOBER, 1957

GOVERNMENT OF BARBADOS. Medical Superintendent required at General Hospital, Barbados, to be responsible generally for the supervision and management of the Hospital and for such other departmental duties as the Governor may direct. He will work under the general direction of the Director of Medical Services. Candidates must possess qualifications registrable in the United Kingdom and have had experience in hospital administration. Appointment on contract for 2 or 3 years, renewable by mutual agreement. Salary £1600 a year. Passages and incidental expenses provided up to the limit of £400 each way. Furnished quarters provided at rental of £125 a year. Income-tax at local rates. Generous leave on completion of agreement. Good social and recreational amenities. Climate healthy for Europeans. Education facilities available.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting reference No. BCD. 117/28/010).

SOUTHPORT. COUNTY BOROUGH OF SOUTHPORT. Applications are invited from registered medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Possession of a D.P.H. or D.C.H. would be an advantage. Salary scale £1050–£50–£1200–£55–£1475, plus a 10 h.p. motor-car mileage allowance.

Application forms and conditions of appointment may be obtained from the Medical Officer of Health, 2, Church-street, Southport. R. EDGAR PERRINS, Town Clerk.

TREASURY MEDICAL SERVICE. Applications are invited from Medical Practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows :—

ENGLAND AND WALES

Wombwell (Barnsley).
Redland, Cotham and Clifton (Bristol).
Poynton (Stockport).
Bedworth (Nuneaton).
Woodville, Church Gresley, Newhall and Swadlincote (Burton-on-Trent).
Botley, Shedfield and Hedge End (Southampton).
Barton-on-Humber (Scunthorpe).
Merstham (Redhill).
Sutton (Sutton).
Woodlands, Adwick le Street, Carcroft and Barmburgh (Doncaster).

SCOTLAND

Edzell (Montrose).
Clarkston, Busby and Eaglesham (Glasgow).

WEST HARTLEPOOL. COUNTY BOROUGH OF WEST HARTLEPOOL. Applications are invited for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH from registered medical practitioners possessing the D.P.H. or D.C.H. The duties will be mainly in connection with Maternity and Child Welfare Services but the person appointed will be required to carry out such other duties (e.g., School Health Service duties) as may from time to time be allocated by the Medical Officer of Health. The appointment will be subject to the Whitley Council scale and conditions. Salary £1050 p.a.–£50–£1200–£55–£1475 p.a., according to experience. A car allowance of £75 p.a. is normally payable. The appointment will be subject to a medical examination for superannuation purposes and to 2 months notice in writing on either side. Canvassing will be a disqualification, and candidates must disclose any relationship to members of the Council.

Applications, stating the names and addresses of 3 referees, must be received by the Medical Officer of Health, Durham House, Victoria-road, West Hartlepool, not later than 14th October, 1957. ERIC J. WAGGOTT, Town Clerk.

Municipal Buildings, West Hartlepool, 19th September, 1957.

YORK. CITY OF YORK. Applications are invited from registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER. The successful applicant will be responsible for a recently built clinic on a housing estate, and will be required to devote approximately half his/her time to clinical duties, and half to general public health duties in the Central Health Department. The possession of a D.P.H. or D.C.H. would be an advantage. Salary scale £1050–£1475, starting point according to age, qualifications, and experience.

Application forms and further details may be obtained from the Medical Officer of Health, 9, St. Leonard's-place, York, to whom applications should be delivered not later than 21st October, 1957. T. C. BENFIELD, Town Clerk.

GOVERNMENT OF THE FEDERATION OF NIGERIA. PATHOLOGIST (hæmatology) required to develop existing basic scheme for Blood Transfusion Centre at Yaba and conduct research into the blood-group systems of West Africans and other related problems. Candidates must possess medical qualification registrable in United Kingdom. A higher qualification (e.g., D.C.P. or Dip.Bact.) an asset.

Appointment :—

(*a*) On short-term contract with inclusive salary from £1338 to £2286 p.a. On completion of contract gratuity (taxable) is paid of £37 10s. for each completed period of 3 months service (including leave).

(*b*) From National Health Service with inclusive salary from £1128 to £1950 p.a., candidate retaining superannuation rights and receiving gratuity (taxable) of 20 % of aggregate of salary.

Quarters at low rental. Free return passages for Officer and wife. Return passages for children, to age 18, provided cost does not exceed that of 2 adult return passages in any 1 tour of service. Children's (separate domicile) allowance of £75 a year for each child under 18, ceasing if children join parents in Nigeria. Income-tax at local rates. Local leave permissible and generous home leave after each tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/14/05).

General Practice

For an **Executive Council post** *(England and Wales) apply on form* **E.C.16A** *obtainable from the council. Mark envelope "Vacancy."*

MIRFIELD, YORKSHIRE. Applications are invited for VACANCY, chiefly urban. List at present approximately 1789. Residential and surgery accommodation available for purchase. Apply on Form E.C.16A, to the undersigned, from whom further particulars may be obtained, not later than 12th October, 1957.

C. H. STABLER, Clerk, West Riding Executive Council.
5, St. John's-north, Wakefield.

Hospital Services : Non-Medical Appointment

BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. GROUP PATHOLOGY DEPARTMENT. Applications are invited from suitably qualified persons for the post of NON-MEDICAL BIOCHEMIST (basic grade) in the Group Pathology Department, Barrow-in-Furness. Whitley Council salary and conditions of service.

Applications, stating age, qualifications, and experience, with names of 2 referees, to the Group Secretary, 105, Abbey-road, Barrow-in-Furness.

Miscellaneous

British European Airways invite applications for 2 medical posts of Assistant Medical Officer in the Corporation's Medical Service, based in United Kingdom. Applicants (Male) must be between 30 and 40 years of age and hold a British medical registration. Preference will be given to candidates with experience of aviation medicine or general practice. Commencing salary according to experience will be within the current B.M.A. range for the post (£1400–£1700). Initially the posts will be temporary appointments for 12 months but successful candidates will be eligible for consideration for a permanent appointment after the satisfactory completion of this period, which will require membership of the Corporation's pension scheme.

Application forms can be obtained from the Establishments Officer, Personnel Dept., B.E.A., Keyline House, Ruislip, Middx., to whom they should be returned, together with a recent photograph, by 14th October, 1957.

Medical Officer required by large Oil Company for service initially based on London but entailing overseas tours of duty and eventually for permanent service in the Middle East. Preference will be given to bachelors under 37 with overseas experience and some knowledge of tropical work. Salary commensurate with qualifications and experience but not less than £1200 p.a. whilst in U.K., pension scheme.—Write quoting No. 646 to Box No. 1189, c/o CHARLES BARKER & SONS LTD., Gateway House, London, E.C.4.

The Proprietor of British Patent No. 695,614 for "Improvements in Apparatus for Artificially Inducing Respiration," desires to enter into negotiations with a firm or firms for the sale of the patent or for the grant of licences thereunder.—Further particulars may be obtained from MARKS & CLERK, 57 and 58, Lincoln's Inn-fields, London, W.C.2.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimens of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

Professional, technical and personal typewriting. Dupli-cating, circularising, &c., efficiently and speedily executed.—"MOWBRAY," 146, Bishopsgate, E.C.2 (BIS. 2545, BAR. 7665).

Typewriting and Duplicating. First-class work at moder-ate prices by experienced medical typists. Electric machines.—SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM 5329/0504).

Microscopes. Immediately available from Stock. Largest selection of all types. Terms if required.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Government Surplus. 25,000 new white operation gowns, 6000 new white 3-pint china basins packed in cases (20 in case), 3500 new linen hospital masks, 1000 new green baize aprons, 750 new hospital flannel shirts.—Write : BASSETT, 331, Kingsland-road, E.8 (Phone : CLIssold 7037).

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"... When all aloud the wind doth blow,
And coughing drowns the parson's saw,
And birds sit brooding in the snow
And Marion's nose looks red and raw ..."

Act V. Sc. II "Love's Labour's Lost" by
William Shakespeare.

Effective decongestant therapy

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Liquefies tenacious sputum and aids its prompt removal

Each teaspoonful of Piriex contains 2 mg. Piriton (chlorpheniramine) maleate, 100 mg. ammonium chloride B.P. and 44 mg. sodium citrate B.P. Supplied in bottles containing 4 fluid ounces and 2 litres.

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